TECHNOLOGY REVIEW

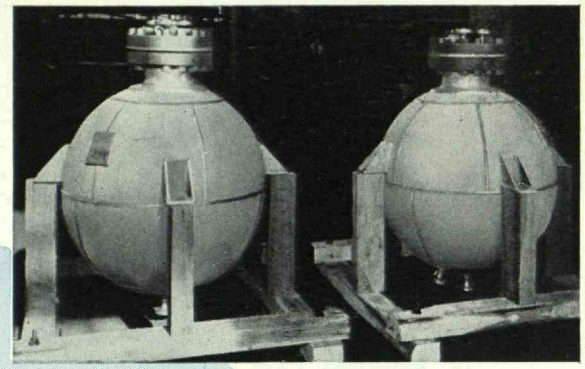
July 1950



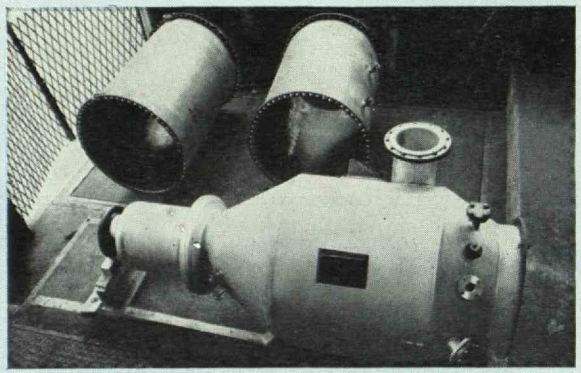
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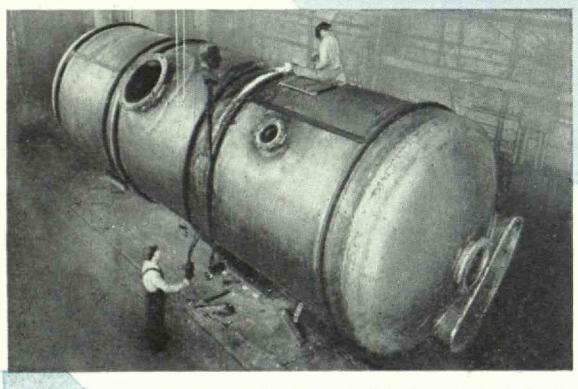
not just another TANK!



These 42" diameter 304 stainless steel spheres are for the storage of monomer chemicals, with an operating temperature of minus 58° F. and a pressure of 500 psig. The welding of the 12 spherical segments to form each tank was performed in compliance with Paragraphs U-69 and U-140 of the A.S.M.E. Code.



A vertical flash evaporator body—12′ in height, 54" and 24" in diameter, built of $\frac{5}{16}$" thick type 316 extra low-carbon stainless steel. Use of expansion joint simplified a difficult space problem on the circulating pump piping.



A horizontal esterification kettle — 34′ in length by 10′ 9" in diameter, built of ⅜" thick deoxidized copper, using the silver brazing process. The vessel was tested at 10 psig. and the steam chest at 250 psig. Total weight was 36,000 lbs.

Present-day equipment design of chemical process vessels frequently requires something more than just another tank. Vulcan handles many such design and fabrication problems and is providing numerous special purpose vessels to process users. Three recent examples are illustrated.

Items such as flash coolers, reactors, decanters, percolators and separators are constructed. Often storage drums and tanks require special features. Complete evaporation units, single or multiple effect, natural or forced circulation, are built. The individual items — bodies, calandrias, heat belts — also are available. Comparison on cost can be made between any of the metals — solid, clad or lined — through Vulcan's wide range of experience in alloy as well as copper and steel fabrication. Acetic acid, ethylene glycol, isopropanol, fatty acids and pharmaceuticals are typical products being handled in Vulcan-built equipment.

VULCAN { **distillation**
evaporation
extraction
processes and equipment

PILOT PLANT
PROCESS DESIGN
MECHANICAL DESIGN
SHOP FABRICATION
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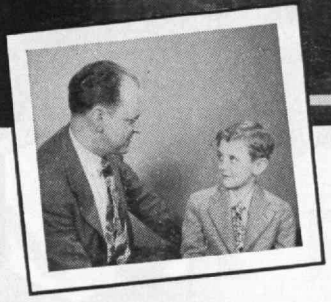


Photo courtesy of United States Steel Corp.

NORTON WORKER BILL SKARIN, left, could give his 7-year-old son Paul some exciting information if they were to visit a steel mill. Bill knows industry. He has been with Norton 14 years. In fact, more than half of his fellow workers have been with Norton more than 10 years.

"IS HE CRACKING THE WHIP, DAD?"

"Yes, Paul, in a sense. He's whipping red hot steel into a pass in a 12-inch mill. That's called stranding. Now let's see how Dad's work helps steel men."



"HE'S GRINDING A BAR, or billet, by using Norton grinding wheels made of Norton's fast, cool-cutting 57 Alundum abrasive. With wheels like these, stock removal of 35 pounds per hour is not unusual.



"THEY'RE POURING METAL from an electric furnace that makes special alloys used in jet engines and rockets. Here again, Norton is on the job. The furnace is lined with a Norton high-temperature *refractory cement!*

"YOU SEE, PAUL, Norton is the world's largest manufacturer of abrasives and related products. In the metal working industry, as well as many, many others, you'll find Norton products always on the job."

Grinding wheel distributors in over 300 cities of the world; warehouses in five cities of the United States; branch grinding wheel plants in six foreign countries.

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BEHR-MANNING, TROY, N. Y. IS A DIVISION OF NORTON COMPANY

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in construction

these men are at home 'round the world

The Lummus construction superintendent and field engineer averages a twelve-year record of refinery building, literally—"everywhere under the sun." In addition, he has seen service at chemical plants and other heavy construction both in this country and abroad.

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Behind Lummus' "ahead of time" deliveries stands the Construction Man. Because he has learned to *anticipate* the problems of remote location, emergencies seldom arise. But the records show that his decisions, made on-the-spot to meet the unexpected, reveal sound judgement and a steady hand. The low labor turnover, reflecting the high morale of his crews, both American and native, is evidence of his human as well as his technical understanding.

During the war he constructed, in record-breaking time, ordnance plants, high octane gasoline plants and plants that produced the raw materials for synthetic rubber. Today, the Lummus Construction Man is combining *time savings* with *dollar savings* in new projects throughout the world.

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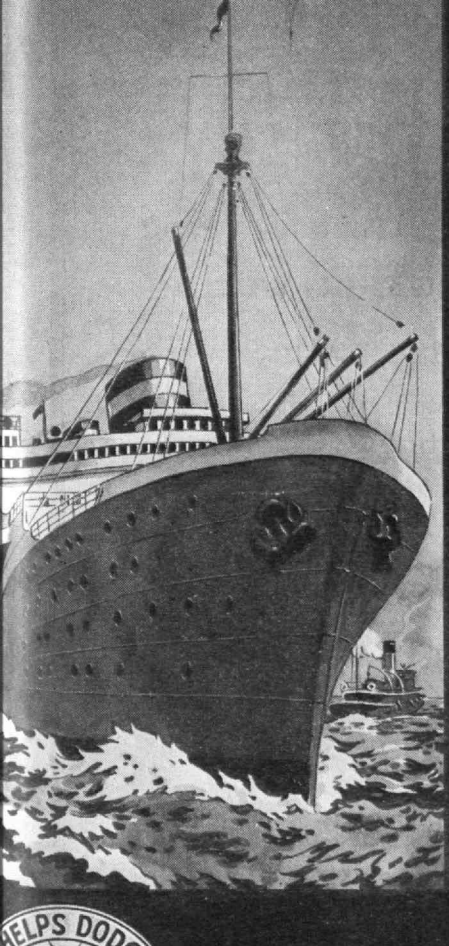
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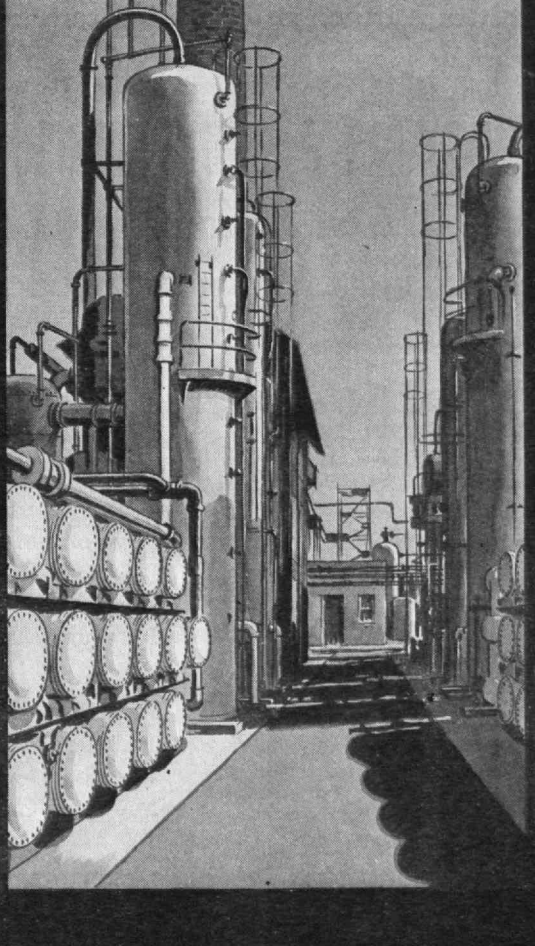


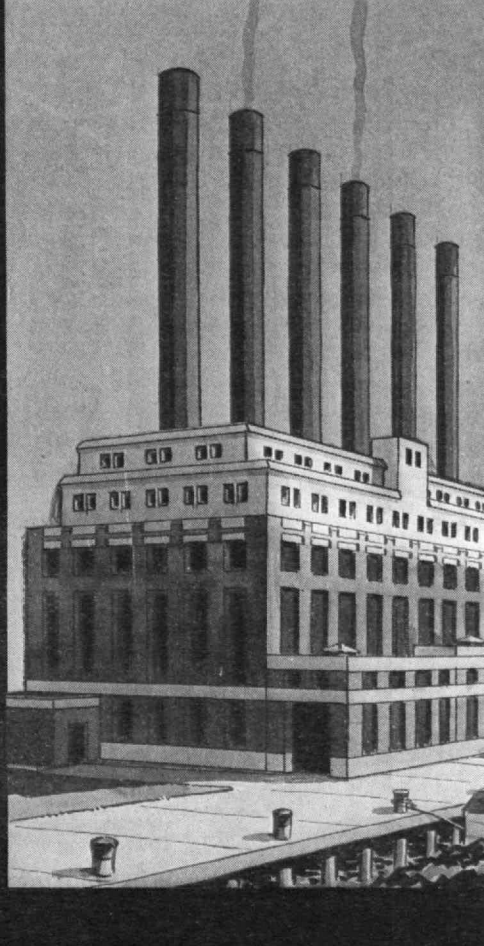
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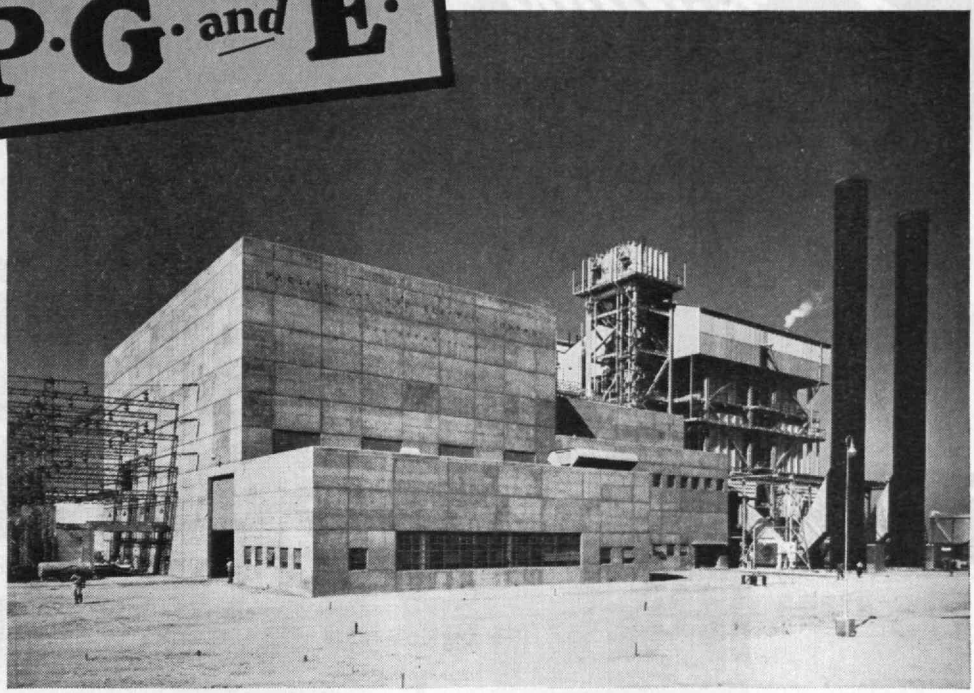
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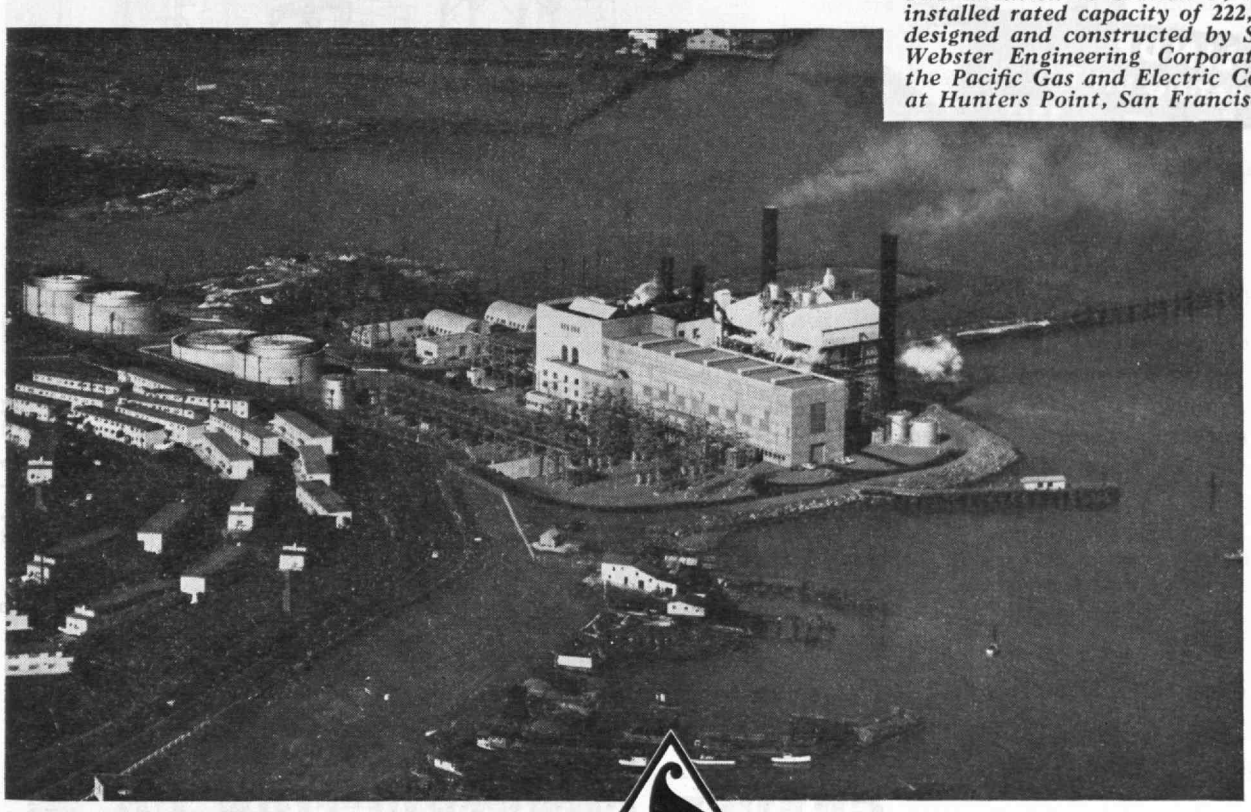
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The Kern Steam Plant, with an installed rated capacity of 175,000 kw, recently completed for the Pacific Gas and Electric Company in Kern County, about 300 miles south of San Francisco in the San Joaquin Valley.

The extension to Station P, with an installed rated capacity of 222,000 kw, designed and constructed by Stone & Webster Engineering Corporation for the Pacific Gas and Electric Company at Hunters Point, San Francisco.



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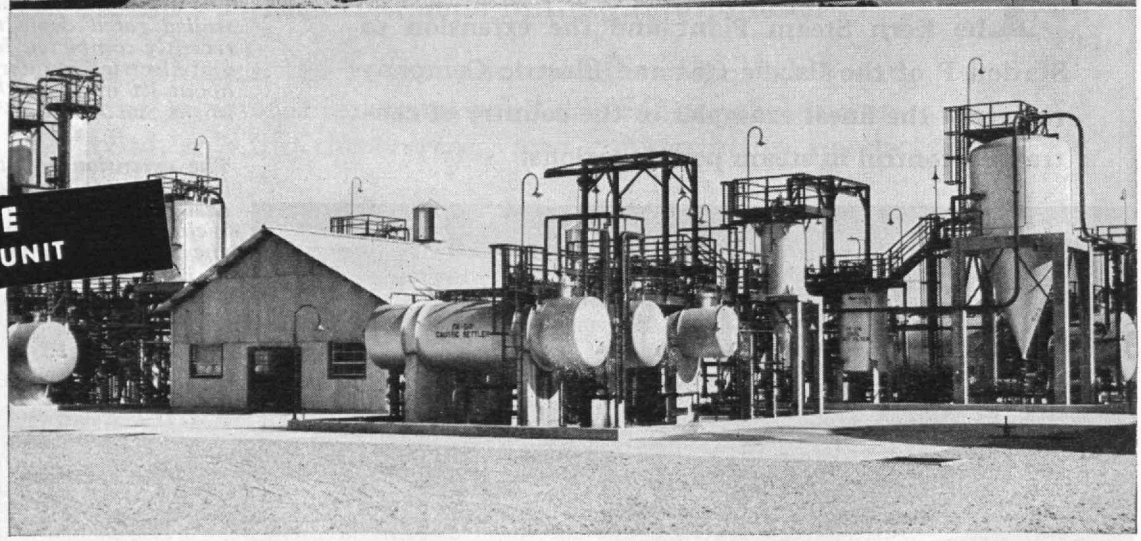
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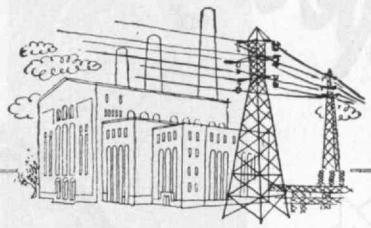
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Ninety-two square-inch picture plus a 10″ high-fidelity speaker in a rich-grained mahogany veneer cabinet. Built-in antenna.



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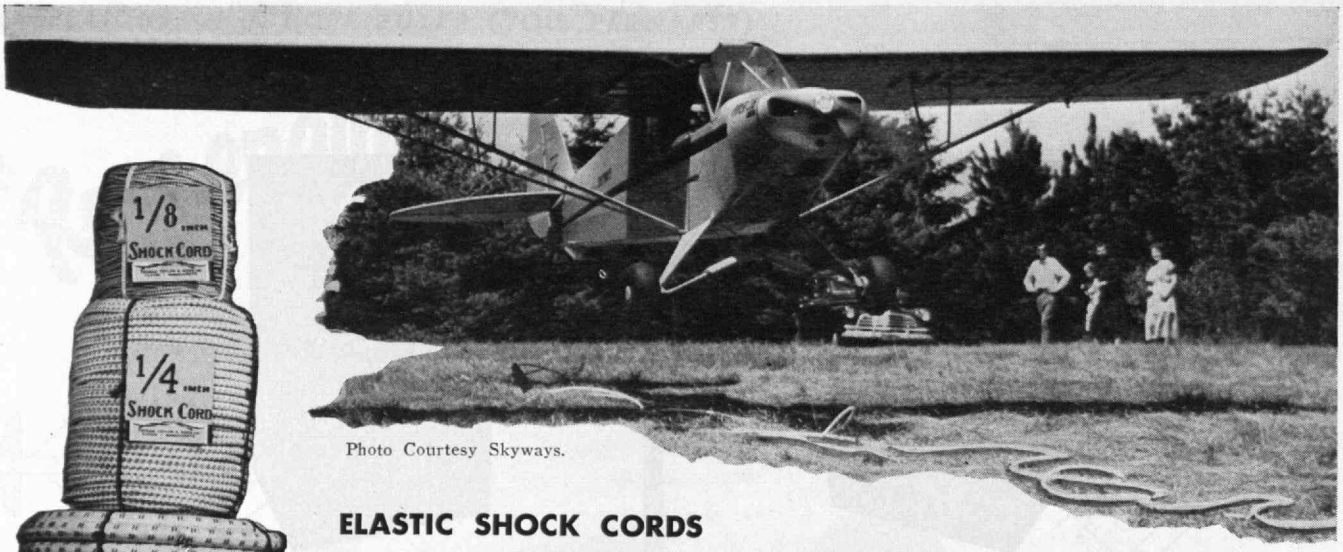


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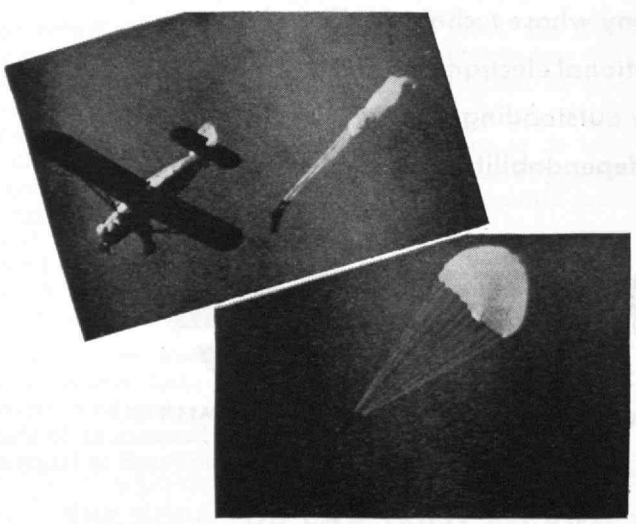
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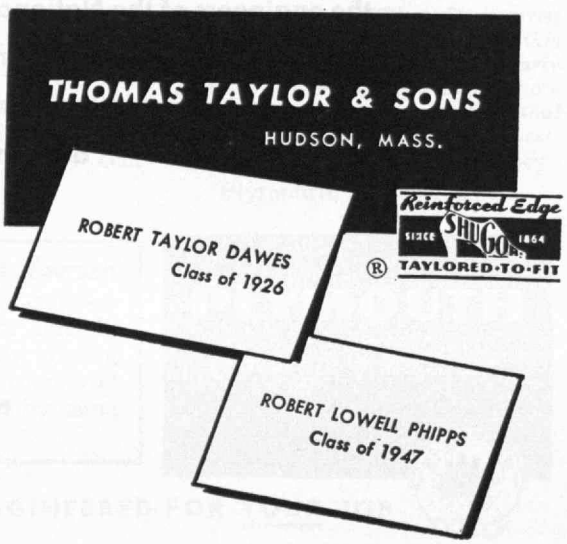




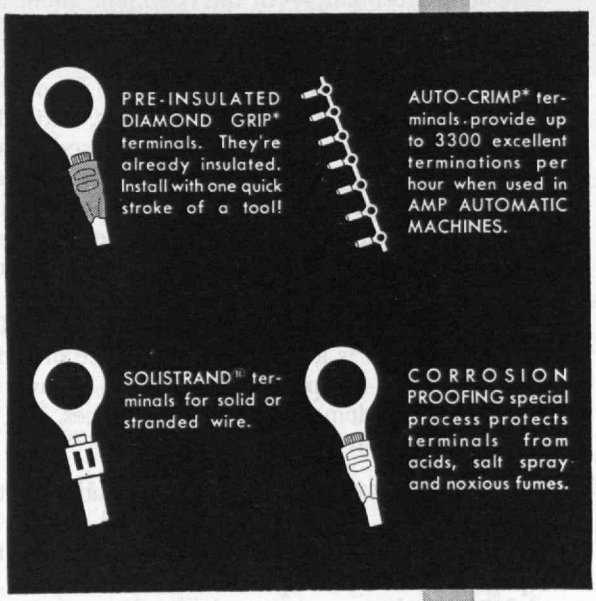
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four major advances in solderless wiring



As part of a continuing campaign for technical improvement in Solderless Wiring, Aircraft-Marine Products Inc. has frequently called upon M.I.T.'s laboratory and research facilities for exhaustive test data.

Work done here has played an important part in designing and adapting AMP terminals for specialized uses, especially in the aircraft and electronics industries. Noise level studies in amplified circuits as well as work with methods of CORROSION PROOFING are outstanding examples.

As a result, technical data is now available on a wide variety of subjects relating to solderless terminals and their performance.

Shown here are but four of the major achievements contributed by AMP toward a better and more economical means of wire termination.

F. H. Wells	*'18*
U. A. Whitaker	*'23*
J. R. Vickery	*'35*
Quentin Berg	*'37*

AMP

*Trade Mark

Items shown are protected by U. S. Patent Nos. 2,379,567; 2,405,111; 2,410,321; 2,468,169 and U. S. Patents Pending.

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THE TABULAR VIEW

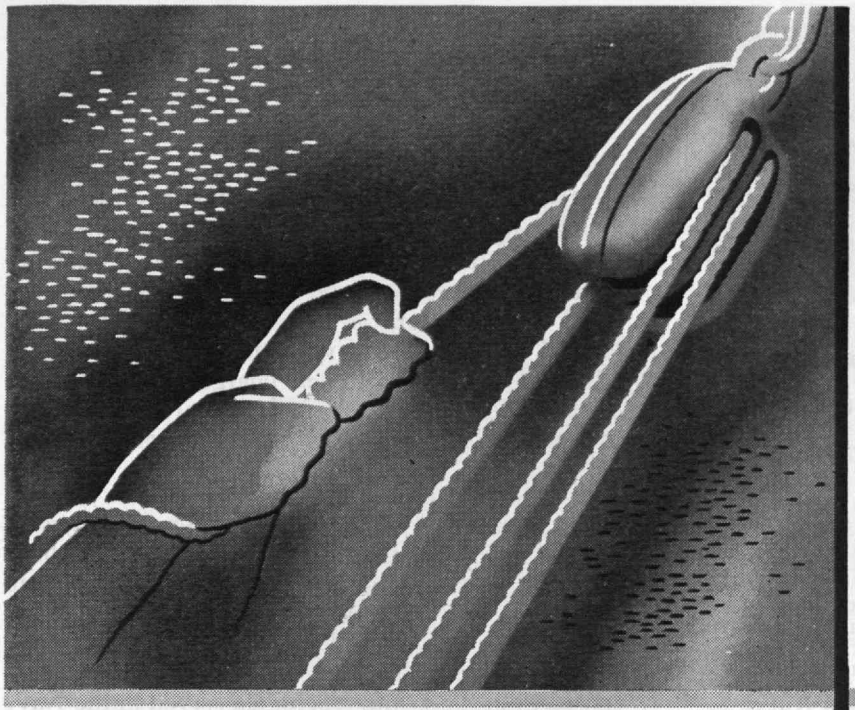
Baccalaureate. — It is The Review's pleasure to be able to bring to its readers (page 497) the baccalaureate address which KARL T. COMPTON delivered before the Class of 1950 on June 8. In hearing Dr. Compton remind them that ethical behavior is the foundation for a successful life, this year's graduates had the unusual privilege of being addressed by the chairman of the M.I.T. Corporation. President of M.I.T. for 18 years, Dr. Compton's lifetime of service as scientist, editor, educator, and administrator — and particularly his wartime and postwar service to the nation, which was often rendered at considerable personal sacrifice — amply serves as illuminating evidence that the righteous life provides its own incentives and satisfactions.

Commencement. — In the commencement address delivered on June 9 before the Class of 1950, CHESTER I. BARNARD, President of the Rockefeller Foundation, discussed three abilities which are the foundation for a successful life. Dr. Barnard's address, "Skill, Knowledge, and Judgment" (page 500) expressed the convictions of one who has had broad background in industry and public service. Beginning his career in the Bell System, Dr. Barnard became president and director of the New Jersey Bell Telephone Company. During World War II he was president of the United Service Organization, and director of the National War Fund. He is a director and trustee of numerous organizations of public service, a fellow of the American Academy of Arts and Sciences, and author of the *Functions of the Executive.*

Valediction. — As they left their studies to take an active part in the affairs of the world, JAMES R. KILLIAN, JR., '26, President, in "Our Shared Convictions" (page 503) bade Godspeed to the Class of 1950, whose 1,225 members constituted the largest graduating class in M.I.T. history. Shortly after this auspicious occasion — the second in which President Killian has awarded degrees as the Institute's administrative head — tables were turned when Harvard University, at its 299th commencement exercises, awarded the degree of doctor of laws to Dr. Killian for his able administrative leadership in the guidance of Technology.

Progress. — In "Printing — the Mother of Progress" which The Review is happy to present on page 506, as one of the Alumni Day symposium papers, COLONEL ELBRIDGE W. PALMER makes a careful review of the development of printing methods, and their contributions to our present mode of life. Colonel Palmer has been president of the Kingsport Press, Inc. for the past 25 years and has been associated with the book-manufacturing field since 1905. During World War II he was deputy director of the Printing and Publishing Division of the War Production Board, and later, deputy director of the Publication Division of the Adjutant General's Office.

(Concluded on page 482)



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THE TABULAR VIEW

(Concluded from page 480)

Obsolescence. — Second of the symposium papers on the Alumni Day program was "Is Reading Obsolete?" (page 510) by ANDREW HEISKELL, Publisher of *Life* and Vice-president of Time, Inc. Following studies in this country and abroad, Mr. Heiskell entered editorial work as reporter for the New York *Herald Tribune,* and a year later became associate editor of *Life* magazine in charge of science and medicine. In 1942, he became general manager, and in 1946, publisher of that well-known magazine.

Promise. — In his symposium paper, "The Promise of Technology," which appears on page 512, LUIS DE FLOREZ, '11, outlines a few of the vast possibilities available to the graphic arts industry through full employment of the products of technology. Admiral de Florez is president of the de Florez Engineering Company, Inc., which has done important engineering work in the printing field. He served in the Navy in both World War I and II, becoming director of Special Devices Division of the Bureau of Aeronautics, and deputy chief of Naval Research.

Alumni. — The series of events associated with the graduation of the Class of 1950 and of Alumni Day, 1950, are reported with word and picture in a staff-written article (page 514). A highly important part of this chronicle is the annual report of the Institute's President, which the reader will find on page 520.

The Review is not published during the summer months following July. This issue, therefore, concludes Volume 52. Number 1 of Volume 53 will be published on October 27 and dated November. Readers who bind their copies are reminded that if they possess nine issues of Volume 52, their files are complete. An index to the volume will be ready on September 30 and will be supplied post free upon request.

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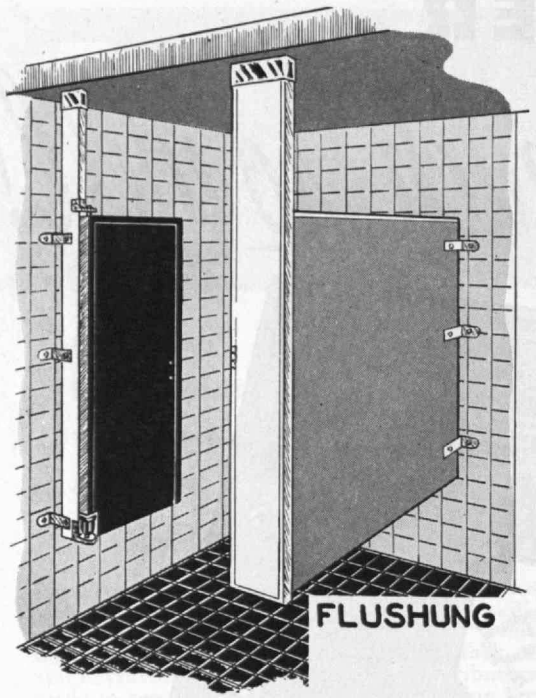
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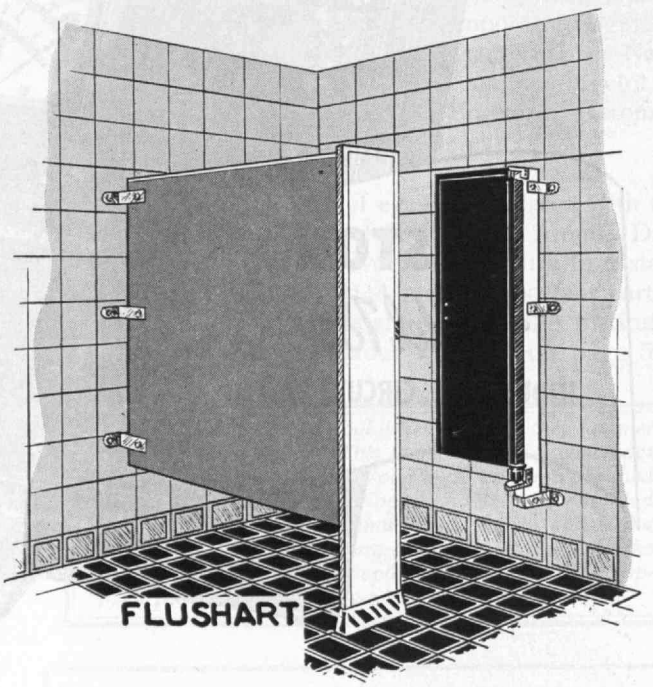
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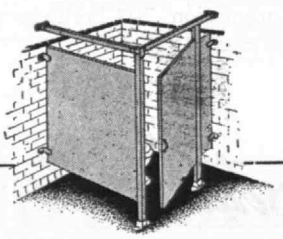
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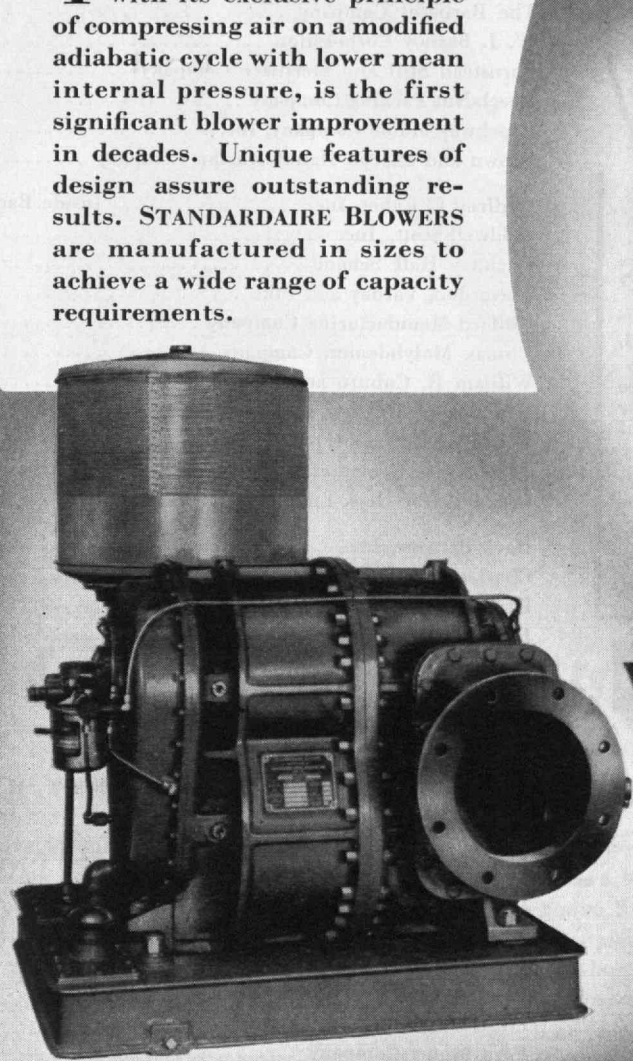
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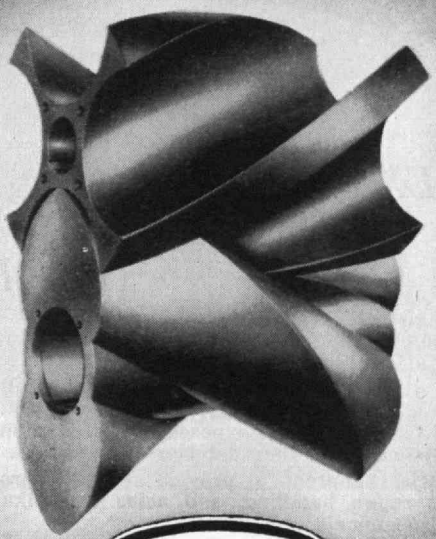
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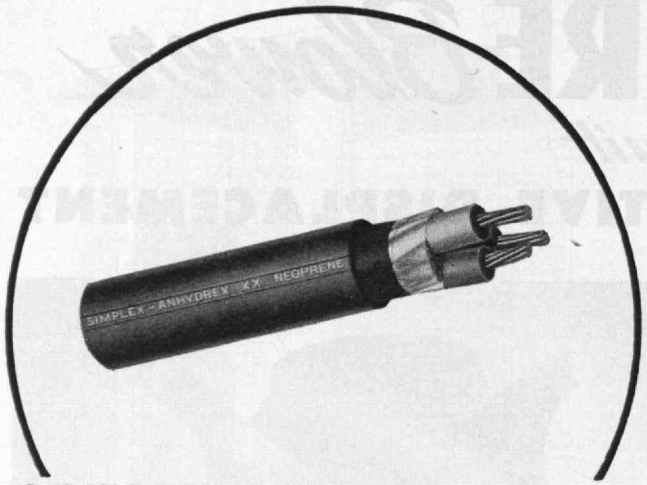
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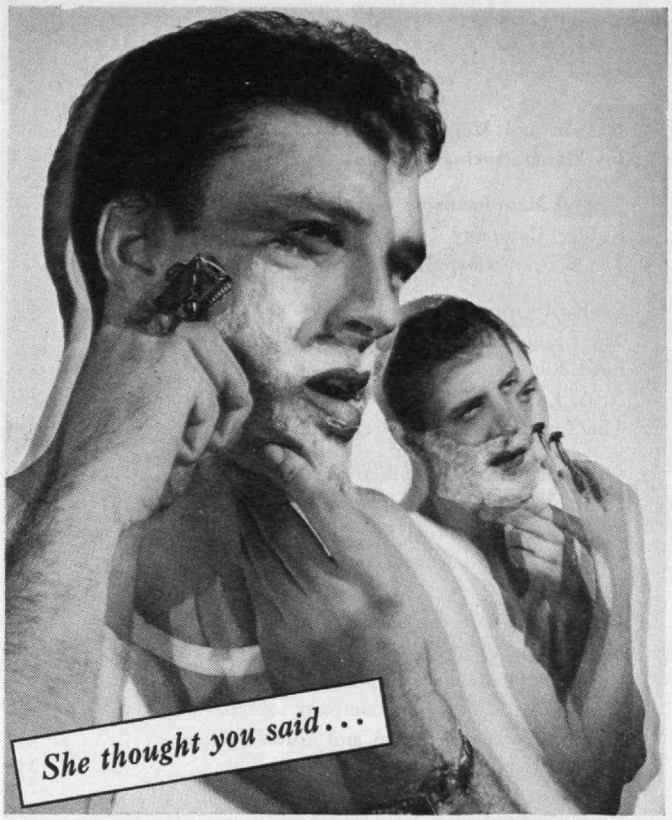
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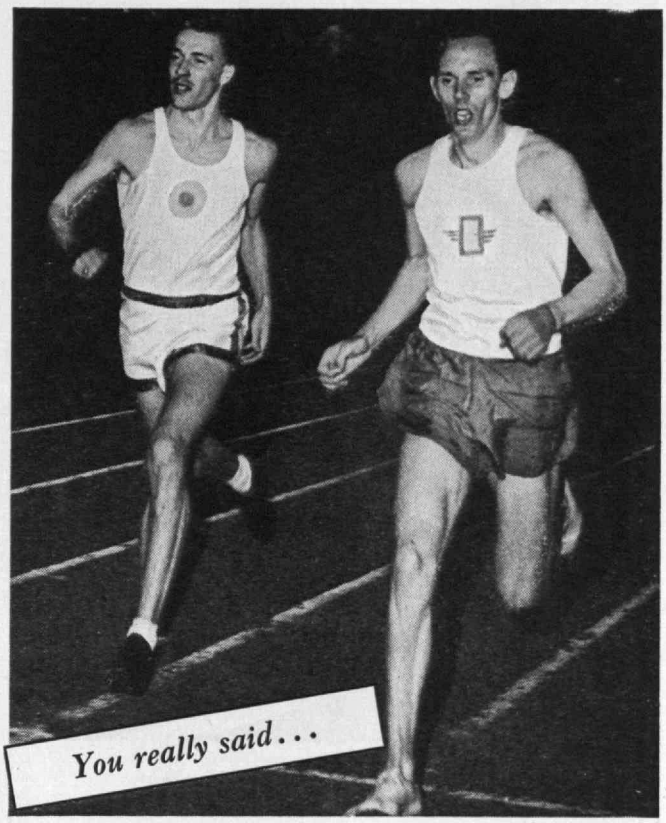
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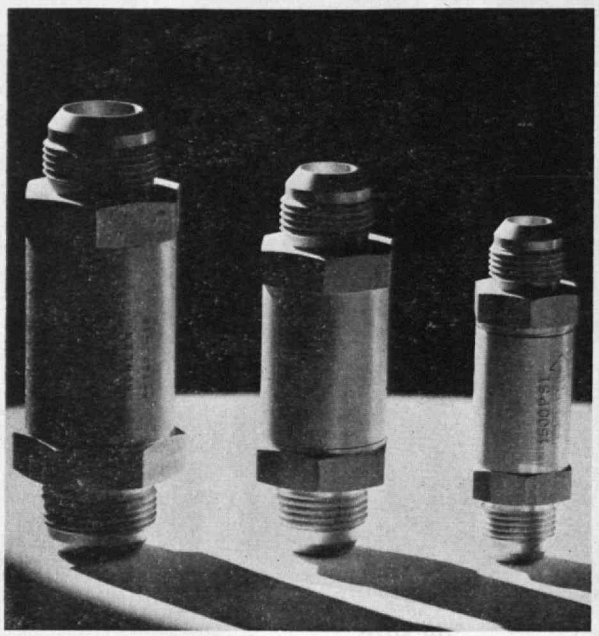


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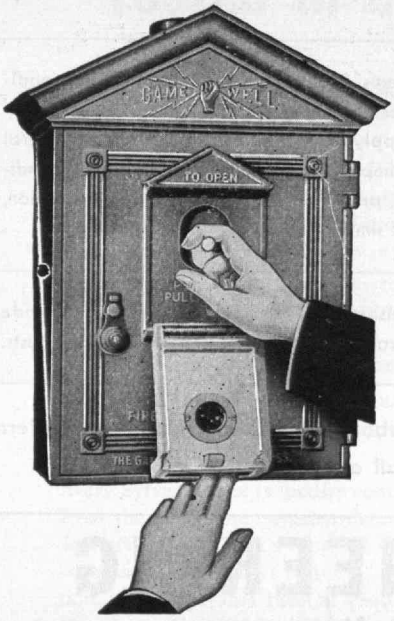
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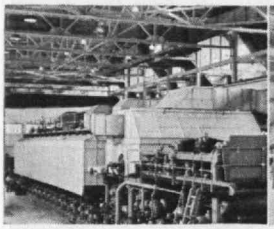
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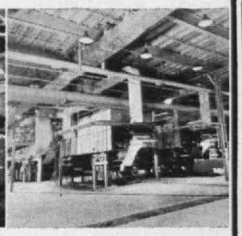
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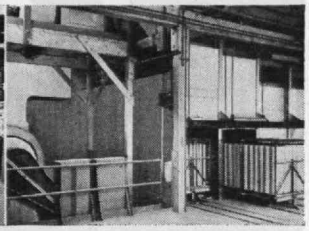
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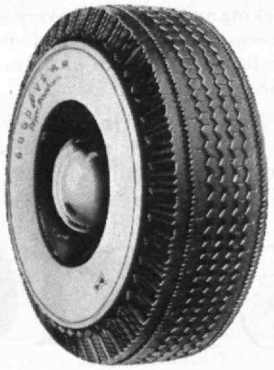
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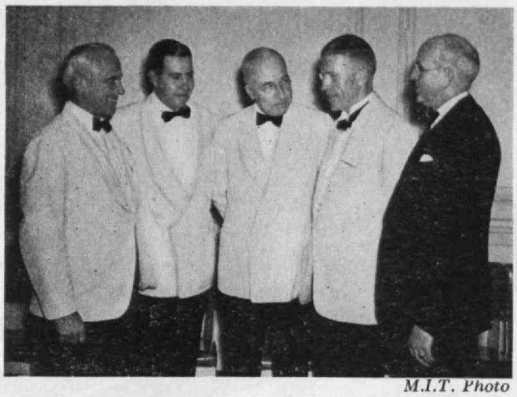
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THE TECHNOLOGY REVIEW

TITLE REGISTERED, U. S. PATENT OFFICE

EDITED AT THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY

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The Trend of Affairs

Visual Access to Atoms

RECENTLY developed at the Institute is a method for photographing the structure of individual atoms in any crystal, using both X-ray and ordinary optical techniques. The new scheme consists essentially of (1) causing X rays to be diffracted by the crystal, (2) arranging the diffraction pattern as though it had been caused by ordinary light and focused with a lens, and (3) substituting visable light in the path that the X rays would have taken *if* they could have been focused. In this way, the good features of X rays are employed in the system, since they have a short enough wave length to "see" the atoms. The substitution of visible light of long wave length for X rays of short wave length has the effect of scaling up the whole optical image-forming process so that the image is magnified by the quotient of the wave lengths of visible light to X rays. This provides the tremendous magnification of almost a million diameters.

This general procedure was first tried by the British physicist, Sir Lawrence Bragg, but his experimental devices had the disadvantage that they could only be applied to imaging a vanishingly small class of crystals. The more general procedure, developed by Professor Martin J. Buerger, '24, of the Department of Geology at Technology, is capable of being applied to any crystal whatever. The key to the more general system is the device which has been developed for shifting the phases of the diffraction spectra. Each X-ray diffraction spectrum cast by the crystal has a specific phase. If this phase cannot be imitated when visible light is substituted for X rays, in general an image cannot be formed of the atoms in the crystal. Professor Buerger arranged to imitate the X-ray phase by interposing small, tilted, mica windows in each of the diffraction spectra after the substitution of visible light. The exact phase shift is controlled by tilting the mica window a known amount, thereby increasing the optical path through it. The computations required are for the purpose of setting these phases accurately. Mica is employed because it can be selected so that it has precisely uniform thickness over a large area.

The light coming from the diffraction pattern is brought to a focus by a lens, and theory shows that the narrow beams of light must superpose in such a way as to produce an image of the atomic pattern of the crystal, exactly as they do in an ordinary microscope. This image of the crystal pattern, magnified about a million diameters as stated above, is still a bit too small to see, so that it must be magnified somewhat further by an auxiliary microscope. The final image may then be either viewed directly or photographed.

Are Mesons Fleet?

As the first significant result to emerge from studies of nuclear mesons produced by the new 300-million-volt synchrotron, which commenced operation at Technology in January, the mean lifetime of the heavier type (π) positive meson has been clocked at 1.65 (± 0.33) x 10^{-8} second. The π mesons disintegrate into the lighter μ mesons and another particle. (The μ meson further disintegrates.)

Research on the lifetime of the meson was carried out in the Laboratory for Nuclear Science and Engineering by William L. Kraushaar, a research associate in the Department of Physics, and was sponsored by the joint program of the Office of Naval Research and the Atomic Energy Commission.

◀ *"Typesetting by Hand," by Andreas Feininger of Black Star, is reminiscent of an era in which all printing operations were manual. The historical perspective, which Mr. Feininger's photographic study suggests, is in marked contrast to the forward-looking ideas expressed in papers delivered in the Alumni Day symposium under the general title, "Access to Ideas—Is Reading Obsolete?"*

Humane Engineering

BECAUSE of the social implications and humanitarian aspects of the program, the Department of Civil and Sanitary Engineering is particularly proud to be engaged in a co-operative project, with the Massachusetts General Hospital, in a study of leg braces with a view to determining procedures of design to meet the structural requirements imposed on the brace during normal conditions of use. While there has been fairly good correlation between the structural members of the brace and the functions they must perform, there is room for improvement. Failures of braces occur, sometimes with rather disastrous results to the patient; whereas in other cases, braces are unnecessarily heavy for the important functions they must serve.

A second purpose of this study is a fundamental study of the mechanism of human locomotion, with particular reference to that of persons with abnormal gait. The purpose of this fundamental study is to develop a more scientific basis on which to design braces for the lower extremities so that the patient may walk with more normal gait characteristics and permit an increase in the present limited range of the mechanical function of the affected limb. The work is directed by the Committee on Brace Research of the Massachusetts General Hospital, a committee composed of Dr. Joseph Barr as chairman, Dr. Paul Norton, Karl Buschenfeldt, who is chief orthopedic technician, and Robert J. Hansen, '48, Assistant Professor of Structural Engineering, as the M.I.T. representative.

To accomplish the first objective, a special brace was constructed with strain gauges affixed to determine the magnitude and distribution of forces on the brace during use. Preliminary tests obtained to date show that the stresses sustained in certain portions of the brace approach the fatigue limit, and thus indicate possible design improvements, although more data are required before the basic principles of brace design can be firmly established.

A more elaborate program of experimentation was undertaken in the study of the mechanism of human locomotion. For this study, a force plate, capable of measuring the ground reactions of the patient was constructed, calibrated, and tested in the Structural Dynamics Laboratory. This plate will measure the vertical force, the horizontal shears (lateral and longitudinal), the center of pressure of the foot, and the torque about a vertical axis of the patient as he steps on the plate. All independent variables are plotted as a function of time on a multichannel oscillograph. At the same time, synchronized motion picture photographs are taken of the patient in two or three views to afford a time-space record of the affected limb and supporting brace. Simultaneously, the stresses in various parts of the leg brace are recorded so that a complete distribution of force may be determined at any instant of time. From these records, using equations of mechanics, the forces in the limb which is affected may also be determined.

From such a study as this, it is hoped that the fundamentals of human locomotion may be determined so that a rational basis for the design and construction of leg braces can be established.

Migration Study

FOR a reaction to take place in the solid state, it is generally necessary that atoms migrate from one position to another. When atoms move through the same element, the process is designated as self-diffusion. Allotropic transformations, creep, recrystallization, and grain growth are examples of solid state changes involving self-diffusion in metals.

As the first step in a long-range study of diffusion kinetics in steel, the Department of Metallurgy is investigating the fundamental problem of self-diffusion in iron. This program is being carried on by Francis S. Buffington, '38, and Israel D. Bakalar, G., both research assistants in the Department of Metallurgy, under the direction of Professor Morris Cohen, '33, of the Department of Metallurgy. Grants from the Engineering Foundation and Titanium Alloy Manufacturing Division support this work.

The use of radioactive iron (Fe^{55}) provides a means of distinguishing between iron atoms, so that the self-diffusion process can be observed even in pure iron. A thin layer of iron containing radioactive Fe^{55} is electroplated on one face of a disc of high-purity iron. At an elevated temperature, atoms diffuse from the radioactive layer into the inert lattice, and radiation from the Fe^{55} atoms is partially absorbed within the specimen. The diffusion process therefore results in a decrease in the intensity of radiation emanating from the face originally containing the radioactive layer. The self-diffusion rate can be calculated from the ratio of the radioactive intensity from this face after diffusion to that before diffusion.

Up to the present time, the effect of temperature on self-diffusion rate has been investigated in both allotropic forms of iron, the face-centered cubic structure (γ-iron) existing between 910 degrees C. and 1400 degrees C., and the body-centered cubic structure (α-iron) existing at all other temperatures below the melting point. At the transformation temperature, 910 degrees C., where both phases coexist, the self-diffusion rate in α-iron is found to be 330 times greater than that in γ-iron. This fact suggests that the diffusion mechanism is probably involved in the sintering of iron powders since, as is well known, powder compacts sinter at a much greater rate just below the transformation point than above it.

The data gathered so far have been used to calculate the average activation energy that an iron atom needs before it can overcome the atomic binding forces and jump from one lattice site to another. It has been found that iron diffuses more rapidly in the body-centered phase than in the face-centered phase because the atoms in the former are less tightly bound and have a greater jump frequency. In agreement with the results of other systems, the preliminary work carried out at M.I.T. has tended to show that the activation energy needed for diffusion in each allotropic phase is essentially independent of temperature. Those experiments will now be extended to include the effects of various alloying elements, plastic deformation, and grain size upon the activation energy. The results obtained should help considerably in clarifying the role that self-diffusion plays in the heat treatment of plain carbon and alloy steels.

Incentives and Satisfactions

". . . Seek Ye First the Kingdom of God, and His Righteousness: and All These Things Shall Be Added unto You"

BY KARL T. COMPTON

BACCALAUREATE ADDRESS

My professional training in both writing and speaking was centered around the delivery of reports on scientific matters, where the emphasis was on a maximum of clarity with a minimum of words. Unlike the orator or the preacher whose objective is to stir men's souls or incite them to action by persuasion and exhortation, the purpose of a scientific report is to describe some discovery or to convey some idea, and the less embellishment the better.

The difference between these two types of public address was forcibly brought home to me by an experience during one of my first academic positions, on the faculty of a western college. In this college each member of the faculty had to take his turn in leading the daily chapel exercises. The program called for a 15-minute address. In one way I was well fortified for this unexpected duty because, for a number of years, I had made a practice of keeping notes on sermons or similar addresses which had impressed me as being particularly significant. Consequently, as my turn to lead the chapel exercise approached, I selected a subject, went carefully over these notes to assemble some ideas, and wrote out my address, not trusting myself to speak extemporaneously. The difficulty, however, was that there was no subject on which I seemed to be able to talk for more than five minutes without saying everything which seemed to me to be worth saying. I vividly recall the pained expression on the face of the president of the college when I closed my remarks at the end of five minutes and he realized that his student body had 10 minutes of unscheduled time during which uncontrolled confusion might disrupt the orderly procession of academic events.

I thought at the time that my inability to fill up the scheduled 15 minutes was due to my success in saying what I had to say clearly and briefly. So far as I could see, I said everything of importance which had been included in the much longer sermons on which I had taken notes. The thing which I did not do, and could not do by temperament or training, was to exhort, to plead, to re-enforce by repetition. However, on looking back more maturely on this episode, I realize that another major factor was that I really did not have very much to say.

Since that time I have had to try to learn to speak on a wide variety of occasions, but I freely confess to you that it is on an occasion like this that I feel most inadequate – inadequate to give you something really helpful as you are about to go out from this institution into what we call rather broadly "the world" – inadequate to express for myself and for my colleagues of the M.I.T. staff the deep feelings of hope, ambition, and affection which we have for you. This affection may often have seemed lacking, or at least very skillfully concealed beneath the grades and quizzes which, like fertilizer on a field, have been spread to help you sprout and grow. But the affection is there and is very real, and will blossom also into pride as we follow your future careers. Next to parent and child, I suppose the relation of teacher to pupil is the greatest bond between the older and the younger generation.

My theme today is "Incentives and Satisfactions" and I am developing it around the general thought of a text taken from Christ's Sermon on the Mount: "Seek ye first the kingdom of God, and his righteousness: and all these things shall be added unto you."

We have a well-known slang expression, "What makes a person tick?" What is the motive power? What is the incentive which keeps a person going? For it is certainly true that physical, or mental, or nervous fatigue seldom results from sustained effort if this effort is motivated by an objective which one pursues with enthusiasm and with some sense of worth-while accomplishment.

In seeking the answer as to what are the incentives which make people operate as they do, philosophers have argued between two extremes. One group maintains that people are motivated only by the desire for pleasure or satisfaction. The other group would maintain that people can be motivated by inherent feelings of affection, loyalty, and duty. The first group, however, would argue that people who think they are motivated by affection, loyalty, or duty really behave as they do because they take pleasure in so doing. A philanthropist gives generously or a martyr suffers acutely because in so doing he takes pride in living up to a principle by which he likes to steer his life.

Of course philosophers like to get the simplest possible interpretations, and sometimes the interpretations are oversimplified. The same thing is true, for example, of physicists. In my student days, physicists recognized the existence of electrons and protons, and tried with moderate success to develop an electron theory of matter. Then came the photon and we had three elementary particles, the electron, the proton, and the photon, and some wag said that if we also added to these the moron we would include the entire universe. However, it was not long before it was discovered that electrons and protons could be both positive and negative; and that there were neutrons, and neutrinos, and now mesons of several different types; and it is recognized that energy can shift from one of these forms to another. Thus we see that the



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character of the physical universe is far more complicated than it was thought to be 30 or 40 years ago.

Similarly, in describing human characteristics, people can shift from selfishness to generosity, from degradation to nobility, from crime to service. The most basic aim of education and of religion is to emphasize the nobler motives so that they become the predominating traits of character. Here it is pertinent to quote from the Proceedings of the Tennessee College Association meeting in 1943 (page 35): "The universities have given the world the guidance it needed in science, economics and sociology, but not in the knowledge of good and evil. Hence they have failed to help civilization where it most needs help."

What are some of the common objectives for which men work? They are such things as wealth, or power, or security, or recognition. They may involve position, advancement, and public esteem. The desire for such things constitutes one class of incentives. These objectives are all desirable. However, they have one thing in common in that they are primarily self-centered. Wealth for wealth's sake, power for power's sake, and recognition for recognition's sake are not very noble ambitions. They may, however, be not only very pleasant, but also very useful in attaining some higher objective, and this leads to the question, what are some of the higher incentives?

As higher incentives I would suggest such things as duty, loyalty, service, or constructive achievement, all of which are distinguished from the former set of objectives by the fact that they imply service to some cause, rather than the satisfaction of some personal and perhaps selfish desire. They are all aimed at something outside of, and bigger than, oneself.

Christ had a remarkable ability to brush aside the unessentials and to emphasize the most basic features of human conduct and of religion. When he said, "Seek ye first the kingdom of God, and his righteousness: and all these things shall be added unto you," he stated in very simple terms a very great truth. Very few men who have been actuated by selfish motives have achieved real greatness. Very many men who have been actuated by the desire to improve the lot of mankind have achieved real greatness and have, at the same time, achieved a personal satisfaction which the self-centered person can never experience. Not only does satisfaction flow from service to others, but many of the other objectives – like recognition, or security, or wealth – are likely to come in greater or less degree as by-products.

Some 15 years ago or so our student body was addressed by Henry C. Link, author of a remarkable book and best seller, *The Return to Religion.** Link gave a broad interpretation to the religious attitude, which he described as loyalty and service to a cause which takes precedence over personal selfish desires. One example which he cited was of a player on an athletic team, where he pointed out the contrast between two types of players. One was the grandstand player who had continually in mind what the crowd or the newspaper reporters would be thinking and saying of his performance; the other was the team player who, for the sake of the team, subordinated his own self-interest, and devoted his every effort to contribute to the team's objective. To this player, the success of his team was, for the time being, his religion. This latter type of player is the more useful.

Mr. Link's illustration has frequently recalled to my mind an incident in a football game in which I played about twice as long ago as you young men were born. The game was somewhat remarkable in that the score stood at 95–0 in our favor when it was ended by the fact that our opponents had no more substitutes with whom to continue. But what I remember most vividly was hearing the last player to be carried off the field moaning in his daze: "I'd die for Old Berea, I'd die for Old Berea." I did not know him, and have never heard of him since, but he has always had my respect, and I have often thought that, at least in his loyalty to his cause, he was the kind of person I would like to be associated with in an organization.

Another example is that of a young man in college. Of course he goes to college in order to secure an education and a training. If, however, his college career is completely described by the attitude, "What can I get out of it?" then he is certain to get out of it far less than is available. If, on the other hand, he plays his part in the college community, takes some responsibility for group activities, for the maintenance of good morale and the good name of the institution, for the assistance of any of his fellows whom he can help, perhaps for helping his family as they make sacrifices for him, or if he becomes absorbed in some scholarly pursuit, then this young man is going to get out of college far more than if his conscious objective is to get out of it all he can just for himself.

Then, after college, comes the job and here again long experience and innumerable examples prove that

* New York: The Macmillan Company, 1936, $1.75.

the person who is motivated first of all by an intense concern for the welfare of the organization which employs him, and an intense desire to contribute to it effectively through his own job, is the person who is not only happy in his work but whose services are valued and recognized by his employer.

The attitude of an employer in these matters is well illustrated by the following experience. A company was about to launch a new enterprise which called for the leadership of a man of high ability and imagination. The job was really an exciting one in its possibilities. A young man of excellent academic record was being interviewed for appointment to this position and the company interviewer outlined the great opportunities in this new development, and then asked the young man if he had any questions. The young man asked, "What assurance can you give me of promotion?" The interviewer closed the interview right there. The young man was evidently egocentric. Ahead of him would probably lie failure and disappointment both to himself and to whomever might employ him, unless his attitude were changed.

I have frequently been asked by young men for my advice to them in the choice of positions which may be open to them. Advice is a hard thing to give because one is always conscious that it may prove to be wrong. However, there is one piece of advice which I think can very seldom fail to be right, especially for a young man at the beginning of his career. It is to take whatever job may be open which gives him the best opportunity to do the thing which he is most enthusiastic about doing. Where there is this incentive, there is likely to follow both personal satisfaction and the constructive achievement which will cause all other things to be added unto him.

It is an interesting phenomenon, and very encouraging, that times of emergency call out the best that people have to offer. A famine in China calls forth a generous response from America. A flood in Winnipeg brings in help from all over Canada and the adjacent parts of the Uinted States. People submerged in routine or selfish pursuits, and even criminals, frequently rise to acts of heroism and self-sacrifice in such emergencies. Perhaps we can say that one of the very few good results of World War II was that it tended to draw forth the best that is in people of good will, and to develop the spirit of service and sacrifice.

We all saw many examples of this during the war, and these examples included not only individuals but also organizations. A few organizations were slow to respond to the emergency, preferring to carry on their normal business with a minimum of interruption. Other organizations rose quickly to the challenge and without mentioning any other names I think we have all been very proud of the record of M.I.T. which, from the beginning of the emergency, followed steadfastly the policy that no self-interest of the institution, or of its personnel, should be allowed to stand in the way of the maximum contribution which we could make to the national effort.

Even in this institutional relationship it was very true that the result, "All these things shall be added unto you," followed from the decision not to seek these things for the sake of the institution, but to subordinate everything to national service. For it is true that those institutions and companies which adopted wholeheartedly the policy of service have, by and large, been those which have come out of the period of war emergency with increased prestige, resources, and *esprit de corps* – and this in spite of what seemed to be sacrifices at the time.

In saying this, I am not arguing that high motives should take precedence over lower ones simply because greater benefits are gained thereby. The high motives should be followed because they are high motives or else the position is shallow and unreal. But I am pointing out simply as a fact the general truth of Christ's statement, "Seek ye first the kingdom of God, and his righteousness and all these things shall be added unto you," or, interpreted in more mundane terms, "Seek ye first to do the things which should be done as a duty or as a service, and all the other things will follow."

At this point it is perhaps well to ask a very practical question. Granted that high-minded objectives are of good repute and bring satisfaction, just how do we go about the putting of this ideal into practice? Here I would have to say that there are many elements which enter in – elements of early training, of personality, of education – many of which may be in the past. In the future, however, there are the accidents of opportunity, there is the future education which can come from self-discipline and directed purpose, for opportunity always lies ahead and it is never too late to seek to do better or to make each decision wisely as opportunity arises.

Some of you may know of a very interesting school paper called *The Next Voter* which is published by the students in the political science course at Brooks School in North Andover. In the issue for this June, the editors have assembled the opinions of more than 70 people of varied prominence and distinction on the subject "The Best Advice I Can Give to an American Boy on his Graduation." I should not, without permission, quote some of the very excellent advice which is there reproduced, coming from President Truman, former President Hoover, Secretary of State Acheson, General Marshall, General Bradley, President Stassen, and many others. The advice covers many qualities of character and types of activity. It includes such subjects as work, tolerance, develop-

(*Continued on page 536*)

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Skill, Knowledge, and Judgment

These Three Abilities Are Needed for Self-Development: All Are Relevant to Problems of Living and a Career

BY CHESTER I. BARNARD

COMMENCEMENT ADDRESS

COMMENCEMENT formally marks the transition between two quite different ways of life. The interests, responsibilities, and the hazards to success of the undergraduate differ radically from those of the graduate. Although he must still keep up his training and keep on learning, the graduate is confronted by two new situations: he is on his own and he is expected to produce. He is now a citizen. In his new role his success will be determined, not primarily by his intellectual equipment and capacities, but rather by the way in which he employs all of his faculties in a succession of concrete situations over which he can have little control. In meeting these situations, he may normally expect to derive a real advantage from the knowledge and training received during his academic career if this knowledge and training are properly combined with certain more intangible abilities not as a rule acquired in student life. These other abilities may turn out to be of prime, and even of almost exclusive, importance. To have had the opportunity of intellectual development afforded by this Institute is a valuable privilege, provided the danger is avoided of that excessive emphasis on intellectual capacities and attainment which may lead to overrating of one's self and an equally pernicious underrating of others. Recognition of this danger should bring about an early appreciation of the importance of the above-mentioned, not exclusively intellectual, qualities.

For fear of being labeled "anti-intellectualist," many hesitate to endorse this rather unusual view, though I am sure it is worthy of more general acceptance. However, it was expressed in a statement recently made by Professor William E. Rappard of the University of Geneva. Although Swiss, he was born and spent most of his early youth in the United States. He was educated at Harvard, Geneva, Berlin, Munich, Vienna, Paris, and Lyon. He taught in this country, and later spent many years at Geneva. He knows the educational processes and their products on both sides of the Atlantic. Referring to an interview some years ago in which he was asked to compare American students with their European counterparts, he said: "What I have seen of Americans here confirms me in the opinion I had formed before the first world war. Compared with European students, the American boy or girl of about 19 or 20 strikes me as more intelligent but less well trained." He added that possibly some of them were more intelligent because they were less trained, and that this was not as absurd as at first glance it might seem to be. He further spoke of the capacities of Americans in some situations as "untrammeled by any excessive bookish preparation," which he regarded to be "an asset which cannot be valued too highly."*

In talking to my associates about the difficulties of reaching decisions, I myself have sometimes half facetiously put this same view in the form of a question: In what kinds of situations is it rational to be irrational; when is it irrational to rely upon rational methods? I can get no answer to my question. This paradox reflects one of the most persistent problems of responsible behavior. Its significance has been recognized to some extent in recent developments in the fields of applied mathematics, mathematical logic, in what is called operational analysis, and especially, in probability mathematics and mathematical statistics. The theoretical solution of these problems we must leave to the future effort of logicians and mathematicians, as well as of psychologists and neurologists. What we are concerned with now is the significance of this state of affairs for the postacademic period. In considering the possibilities for intelligent and effective behavior in the immediate future, the graduate may well ask: "What kinds of abilities do I need to develop for myself? What kinds should I recognize in others as relevant to my own problems of living and career?" My answer is: At least three kinds of abilities which I shall discuss under the headings of Skills, Knowledge, and Judgment.

Skill

On the subject of skills, I should like to mention, first of all, bodily skill. By this I mean the ability of the individual to control and direct the movements of his body. Standing, walking, sitting down, and lying down are the common abilities of this kind, so fundamental to all others and so obvious and universal that most people take them for granted. Not until some disease or accident prevents the exercise of these skills, do we see what a handicap the lack of them entails. Bring down your ambitious student with a high fever and he will soon be aware of the limited intellectual capacity thereby imposed on his system. Work of any kind is beyond his physical and mental ability.

The impairment of fundamental bodily skills has often hindered the completion of great engineering projects, notably the first attempt in the 1880's to build the Panama Canal. Newcomers from the North were terror-struck by the deadly and spectacular character of yellow fever, but in the construction programs, malaria, which produced a vast amount of chronic disability, was an even more serious obstacle.

*"The Impact of American Students on European Universities," *Institute of International Education News Bulletin*, April 1, 1950, page 3.

The fundamental bodily skills can be developed in special ways that are often greatly admired. The golfer who shoots in the 70's and 80's has learned to control his movements in a fine degree. So have the concert pianist and the operatic soprano. Surgery, molecular biology, microchemistry, electronics, and countless other fields, many of them directly concerned with the application of science and technology, demand highly specialized bodily skills. We are living in a society in which the material aspects of living require the type of extreme specialization in which these skills are indispensable.

Without going further into a discussion of the common and special skills, I merely stress the fact that they are, as a whole, basic to acquiring knowledge as well as to its application and to the appraisal of individual abilities. I now pass to three special skills which at first you may regard as intellectual, rather than bodily, skills. In some cases they are both.

The first is skill in getting along with people. This is something that intellectuals subscribe to on paper, but are rarely able to pass along to younger people. There is not yet much that can be taught by precept and reasoning in this sphere. Young people learn by imitation and by practice. Both behavioristically as well as intellectually they should realize that getting along with people is of major importance. It is not just a matter of pleasant relationships. Whatever the career a man elects, if he has not acquired the ability to get along with people, he cannot stimulate the best in others or elicit their co-operation. He lacks elements essential to successful effort.

Recently the organization with which I am connected made a substantial grant for the establishment of a technical division in the government of a certain foreign country. We had confidence in the character and technical competence of the man who was promoting the enterprise. It so happened, however, that our support was contingent on additional support to be obtained from the government itself. This was not forthcoming because the promoter could not get along with other people in other departments of the government, more particularly, the treasury. Excessive enthusiasm led him to disregard the position and the interests of his colleagues. I believe his chief limitation was sheer inability to get along with others, not lack of personality, or even of intellectual persuasiveness, but excessive centering upon his own, ultimately unselfish, interests. Certainly it was not a question of intellectual competence. The point is that successful relationships with other people require a skill which transcends intellectual competence. The secret lies in commanding the respect of others.

Closely related to this top skill of getting along with people is the ability to persuade. I have talked many times to engineers on this subject, and I used to despair of their appreciation of the art of persuasion and its social importance. Happily, this effect of rigorous intellectual training is modified in the technical colleges, through courses in the humanities, with emphasis upon the human and social aspects of life, and through instruction on human relations in industry. Nevertheless, it should be repeated that the art of persuasion is a prerequisite to social progress. In the last analysis, persuasion is the art of presenting products, technical ideas, and abstract social possibilities in such a way that they are related to the aims, goals, and ideals of others.

Persuasion, too, is an indispensable skill if professional knowledge of any kind is to be effectively and economically utilized. Persuasion is not a method of argument, or of abstract demonstration. It is much more a capacity to divine the essential interest and responsibilities of others so effectively as to impart to these others, in terms they understand, knowledge of the resources—material, intellectual, and moral—which are open to them.

The last of the skills to which I invite your attention is at once the most subtle and the most difficult to describe. It is the skill, understanding, and know-how that comes normally from intimate personal association with materials, systems, and people. As one of my scientist friends once phrased it, it is the skill of "intuitive familiarity." Whether you consider laboratory or field sciences, administration, politics, education, or art, it is a skill that comes from patient hard work with the subject matter. Usually it is untransmittible through symbols, example, or demonstration. Its intellectual aspects are not salient, but it is expressed in the capacity of scientists, physicians, and executives to make diagnoses, select remedies, and sense impalpable obstacles and dangers. They cannot explain any of these things with words – at least not quickly and easily – but the exercise of this intuitive skill is apparent in any sphere of endeavor to those who look for it.

A. Devaney, Inc., N.Y.



Knowledge

Knowledge, and by this I mean every variety of knowledge, rests upon the existence of skills of many kinds. Many of the basic skills on which we depend for our very existence are biological skills.

However, even though we could not do without them, biological skills are not exclusive factors in the acquisition of knowledge. The crucial elements in man's ascendancy over all other forms of life, are those skills which are intrinsically human. I refer especially to man's skill in dealing with other members of his species — the skill, now developing into an art and a science, of human relations. Above all, it is our skill in verbal communication which serves as the instrument for attaining, utilizing, and transmitting knowledge. A corollary to this is the uniquely human ability to conceive of things in the abstract. It is through language communication and abstraction that the knowledge, hidden or implicit in skills, becomes explicit and overt. Through abstraction and communication we extract from skills statements of fact and general propositions concerning facts. These become the keystones in the arch of knowledge.

Knowledge can usefully be divided into two broad categories. The first consists of the large body of organized, formal knowledge, which, theoretically at least, is available to anyone. It is universally applicable and of widespread interest. It is in the kind of knowledge that can be put into books, taught in schools, or acquired by deliberate observation and experiment. It includes all scientific knowledge and much knowledge in the nonscientific spheres, such as history, law, and literature. It encompasses the entire content of what is referred to as "book learning."

There is an important point about this kind of knowledge that deserves mention here: namely, that in recent generations it has expanded swiftly and today is still growing at an unprecedented rate. Time was when a learned man could lay claim to mastery of a large part of the existent knowledge, or at least to a large part of the knowledge available in Western civilization. Today the most learned man is, relatively speaking, still an ignorant man. The store of knowledge is so immense that what he knows is slight in comparison to what he does not and cannot know. Our great resources of documented knowledge are a social, rather than a personal, possession. Awareness of this fact should generate a proportionate sense of humility. It should also bring us to realize that we are faced with a formidable new technical problem: that of making available and of communicating to others our vast accumulation of organized knowledge, so that it will be there for them to use when they need it. This is a task that we dare not neglect, for the human life span is short and human memory still shorter.

The second kind of knowledge is much less well recognized. As a matter of fact, many people are unwilling to grant that it is knowledge at all. I am speaking of the local and personal knowledge of everyday and commonplace matters. This knowledge is not of general interest and little of it is recorded. Most of it is only of personal value, and almost none of it is scientific in character. Yet it is as essential to the acquisition of the general knowledge as are those basic skills that we have been discussing. It consists of knowledge of the particular individuals with whom you come in contact in all your various life situations, knowledge of the specific materials with which we work, familiarity with the specific times and places with which we are concerned, and, it may be, unarticulated understanding of the channels of events around us. It includes what one learns in Al Smith's famous College of Hard Knocks. Much of it is knowledge of one's self. Each of us is a little island of this kind of knowledge, an island that grows quite quickly with early experience, more slowly later, and finally ceases as the losses of memory exceed the gains produced by new experience. The aggregate volume of this highly personal and intangible knowledge, unlike more general knowledge, probably does not greatly differ with the centuries or with social status.

I think that enough has been said to make my point; but it would not surprise me if you said, "Of course, but why discuss it? It is obvious; no one is devoid of this kind of knowledge; everybody has it and no one is much interested in the personal knowledge that others have." This is true and the discussion would be out of place here if not for one crucial fact. And that is that this kind of personal, on-the-spot knowledge, too often underrated, is absolutely indispensable for the acceptance and the discharge of responsibility for all and any action, and the capacity for responsibility is a vital component in the execution of useful work or the development of careers in every field. It is also an important ingredient of judgment, of which more later. It must be emphasized that whatever the extent of our skills, our intellects, and our professional knowledge, these cannot be effectively or consistently applied except insofar as we are alert to the facts of our immediate personal situations, aware of their relevant immediate histories. We must know where we are, where we want to go, and how to get there. Nor can we afford to have less than a complete ability to understand and speak the language of the commonplace world that surrounds us.

All of this is essential to dependable behavior, which in turn is a prime requirement of responsible effort. It is customary to stress moral character in connection with responsibility, rather than adequacy of local personal knowledge, and this too is correct. But the fact remains that the best intentions and the highest principles will not guarantee truly responsible behavior if a man is living in the clouds or is out of touch with his environment and with his coworkers. In such a circumstance, even the greatest skills, the most profound knowledge and the highest intellectual competence are likely to lead to failure. This is what we mean when we say that a man must "know the ropes" before he can effectively apply his talents. Another way to epitomize the sense of this discussion is to say that only rare individuals in highly protected positions could be useful if they were persistently absent-minded.

It follows, therefore, that although everyday, personal knowledge, except in some phases of psychology and sociology, can have no place in the curriculums of our schools, it is far from trivial in importance. Hard

(*Continued on page 528*)

Our Shared Convictions

Tolerance, Willingness to Accept Change, and Faith in the Future and in our Spiritual Unity Stand as Bulwarks Against Doctrines of Regimentation

BY JAMES R. KILLIAN, JR.

VALEDICTORY ADDRESS

You, the class of the mid-century, must surely feel the responsibilities and the distinctions which your graduation date confers upon you. You cannot escape the significance of the mid-century as a symbol of transition, a time for reaffirmation, a junction point of destiny. Since these milestones of the calendar are always times of stocktaking, of looking backward and peering forward, I would like today to inventory certain of your present responsibilities which bear upon your future obligations as citizens. I particularly want to urge that you accept the mid-century designation as a continuing mandate to re-examine your personal philosophy to make sure that it provides you with a credo and a code to guide you in the years ahead.

This graduation for most of you marks your entry into the workaday world and into active citizenship. Your responsibilities take on new dimensions and new orientations. This decisive moment in your personal careers may also be a decisive moment in the history of the civilized world. You enter upon the stage of life at a climactic period. This is your destiny – to participate in and influence tremendously significant events.

When you entered college in September, 1946, the mood of exultation and hope that followed the end of World War II was fading into misgivings. A radical adjustment of hopes and attitudes was taking place. By then it was beginning to be generally apparent that the Russians were not acting in good faith to support those principles of conduct which they had endorsed through the United Nations charter. It was that September, when you were beginning to find your bearings in the new world of college, that Americans as a whole were beginning to find their bearings in a new world of conflict. The Byrnes-Wallace dispute that month, over the policy of firmness with Russia, dramatized the shift that was taking place. Subsequent months saw ever-growing support of a foreign policy for the United States which accepted the grim reality of a world divided.

Certainly you who have lived such a large fraction of your career involved both in war and in cold war have a right to hope that the mid-century point marks a change in sign from plus to minus in the century's curve of crisis. We who congratulate you today cannot guarantee you any such happy change. To do so would be to leave you incredulous or to mislead you. We can say to you that we have confidence and faith in your well-tempered strength to meet the uncertainties of the future and to meet them courageously. The official act we perform today is evidence of this confidence. Your diploma is the public recognition of an achievement towards which the plans, hopes, and sacrifices of your families and yourselves have been directed for many years. This accomplishment is a good augury for the future.

What we cannot know about, or provide you, is an inner resource which only you yourself can construct – the personal philosophy, the credo, the bench marks to live by which are so important to each of us in a period of tension and turmoil. The importance of this credo for a time of crisis is my theme today, although I am going to discuss it indirectly by concentrating on those beliefs that help to unify our country.

A little girl awakened to the mysteries of anatomy by the picture of a skeleton, asked her older brother what the skeleton was for. "If *you* didn't have a skeleton," answered her brother, "you'd just be a heap." Similarly I say to you that if you don't have a philosophy or code of action, you are likely to be just a squashy heap without resilience and without defenses against crises.

At this stage Americans particularly need to clarify and consolidate their values as Americans. In the face of attacks by communism and totalitarianism, the American cannot afford to be a squashy heap. As the late Peter Marshall, chaplain of the Senate, once prayed: "Give us clear vision that we may know where to stand and what to stand for, because unless we stand for something, we shall fall for anything."

Knowledge about our American democracy and its special ideals and values is the strongest weapon we can now muster. It is also the best insurance against the hundred percenter and the zealot – the zealot, of course, being a person who redoubles his efforts when he has lost sight of his aim. What are these shared convictions which create a common faith in America and which, therefore, buttress our solidarity and union as a nation? Those of you from other lands who graduate today will not be uninterested in this topic, for I am sure it is a part of your educational objective to know something of this nation, and the objects of its society.

Many of these concepts and goals are self-evident, as the Declaration of Independence says they are . . . life, liberty, and the pursuit of happiness; governments deriving their just powers from the consent of the governed; government of the people, by the people, for the people; civil liberties; equality of oppor-

tunity; social justice. These objects of our society we now assume to be basic and self-evident. I speak today, not of these, but of those elements of faith and outlook the possession of which can make all Americans kin. I suggest that there are four of these common denominators in the outlook of Americans.

First, there is a deep-seated faith in the future, the kind of faith implicit in these exercises today, and in the growth and evolution of this institution. The American people have always professed a faith in the future; democracy requires it; our economy is based upon it; the American spirit is vitalized by it.

Faith in the future has made America one of the most progressive nations in the world. Progress can only come when men and women are ready to risk their lives and fortunes on the future – and in this country we have always believed that there is a future worth taking a risk for. That is why the pioneers in this country gave up security to push westward and start new communities. It is because of this faith that men and women have risked their savings on new industrial developments. Having faith in the future, men and women have accepted the uncertainties and interdependencies of an industrial civilization in order that man's welfare can be advanced. Risk-taking is a basic characteristic of democracy and of progress. Risk-taking demands faith. I hope that you of the Class of 1950 have this faith in yourselves, that the siren call of security will not divert you from your course. For ambitious young people, security is the hobgoblin of the timid, the feather bed of the fearful.

Implicit in the American faith in the future is the conviction that life has meaning, and that this meaning is discoverable. This conviction is identical with the conviction of the scientist that there is order and harmony in the universe which can be revealed by orderly research, that "man is capable of discovery, and turning to human use, more and more of the structural truth about his universe and his own mind and body." Americans find unity in this belief in the fulfillment of the future.

The second common denominator in the American outlook is a belief in the validity of change – a willingness to accept change. "The genius of America," says David Lilienthal, "is in its ability to make adjustments. That was the condition of conquering a virgin continent. The majority of us recognize a fact when we hit one, and move over. . . . We are adaptable, and because we are adaptable we are strong." This adjustability explains in part why we have governed ourselves longer than any people on earth, why within the framework of a constitution hardly changed since its adoption, we have steadily shifted from a representative system to a democracy, evolved a two-party system unforeseen by the founding fathers, and adjusted the Federal Government to the changing degrees of centralization called for by wars and peace and continental expansion. By such continuous adjustments we have avoided, save for the Civil War, the violence and revolution which accompany changes in a more rigid system.

Again we can draw an interesting parallel with the spirit and outlook of science. Scientists are constantly being corrected and even disproved by each other, and there are no hard feelings. Such a process of refinement and adjustment is taken for granted and approved as essential to the progress of science. Fortunately a similar attitude sems to be deep-seated in American life, a readiness to modify our understanding of the right way whenever it is found to be in error in respect to the general welfare.

A third unifying concept is a tolerance of differences, a repugnance for regimentation, and an acceptance of dissent. Someone, doubtless a Frenchman, once remarked that America has created one sauce and 367 religions. The impressive thing is that with only one sauce to sustain us, we can tolerate so many different and contending theologies, or so many different races and varieties of people, so many different beliefs, that we can have this enormous diversity and yet still maintain a unity resting upon the concept that diversity is good. America is cemented together by this concept, which rests upon another and more fundamental belief – the belief in the dignity of the individual and his inalienable right to seek happiness, freedom, and salvation according to his own lights. Perhaps the measure of our success as a nation is the status of the individual man.

My fourth and final common denominator of our American faith is the spiritual unity of our people, which overrides our religious diversity. Running through all our diversities are common ethical and moral strands, originating in large part in our Hebrew-Christian tradition. The tradition that every human being has spiritual importance, that life is sacred, that the golden rule is fundamental, that certain broad principles of morality and justice are natural, that is, universal and unchanging.

If we in America had not been able to reach wide agreement on what is good and what is evil, our civilization might have perished long before this. Winston Churchill, at the M.I.T. Mid-Century Convocation, spoke of the "flame of Christian ethics" as being still our highest guide. He spoke as a student of history who knows that it is because we have remained committed to these moral standards that our culture has survived. Such spiritual unity provides the only framework within which the other attributes of our society are possible. Progress, peaceful adjustment to change, tolerance, and respect for divers opinions and needs, can only coexist where there is a shared conviction that it is man and his needs which give meaning and purpose to the laws and institutions of society. Otherwise, freedom would lead to chaos – as in fact it has in countries where wide consensus on goals is lacking.

We have until recently been able to take it for granted that most of us in this country are acting in good faith to support our common aims based on respect for man. That has been the course of our great progress as a nation. It has been the reason why what we have done on this continent has given hope to man everywhere that men can learn to live in peace without those coercive powers of state that destroy the integrity of individuals.

When Thomas Jefferson penned the lines of the Declaration of Independence, he was not deciding what was right and what was wrong. As he was later to write to his friend Henry Lee of the Declaration: "It was intended to be an expression of the American

mind, and to give to that expression the proper tone and spirit called for by the occasion. All its authority rests, then, on the harmonizing sentiments of the day, whether expressed in conversation, in letters, printed essays or in the elementary books of public right, as Aristotle, Cicero, Locke, Sidney, etc." That the democratic way of life must rest on such "harmonizing sentiments" – on a foundation of common beliefs – if it is to be more than a pious hope, was demonstrated by the experience of France in the Eighteenth Century and of the post-World War I democracies in Europe in our own day.

These shared convictions, these bonds of unity, which I have so roughly sketched need more than ever to be stressed today when we face the regimented doctrines of communism and the hazard of disunity created by our efforts to combat communism's conspiratorial tactics. Our great strength lies in a proud, self-confident commitment to our own unifying philosophy, and to an articulate, vehement advocacy of our ideals. Walt Whitman long ago called the cue:

> Long, too long America,
> Traveling roads all even and peaceful you
> learn'd from joys and prosperity only,
> But now, ah now, to learn from crises of
> anguish, advancing, grappling with direst
> fate and recoiling not,
> And now to conceive and show to the world
> what your children en-masse really are . . .

This veritably is our cue and not the technique of tearing our unity apart which we have been witnessing recently in Washington. Within the month the Washington *Post* in an eloquent editorial advocating the establishment of a nonpartisan commission on national security, commented on the "rising distrust, the roaring bitterness, the ranging of Americans against Americans, the assault on freedom of inquiry, the intolerance of opposition" in our national capital.

"We know," said this editorial, "that some sincere people claim that we have had these abuses before and have lived through them, as when business and finance were pilloried during the 1930's . . . the class bitterness stirred up by these excesses still hurts our unity . . . the very expression of our political liberty is the opposition that the witch-hunting would stifle . . . the mad-dog quality of McCarthyism has become so apparent that its power for sowing confusion and suspicion has probably spent its force. . . . However, it would be reckless to ignore the circumstances that permitted this . . . aberration to paralyze American diplomacy and to thrust fears and doubts in the minds of our people. The urgent problem is to find a way back to a basic unity, to traditional American standards." So speaks a courageous and conservative representative of our free press.

Other voices, notably Archibald MacLeish's, in a recent speech at Wellesley College, similarly deplore the current violations of the American credo. "Confidence in peace," he said, "confidence in the future, the natural, normal, decent confidence of men of courage and character in their country and in themselves, has all but vanished from the Congress of the United States. And in the prolonged and inexplicable silence of the President there are few voices raised anywhere for what we used to think of as the American cause: the cause of the human future."

These clinical notes, ladies and gentlemen of the graduating class, on a current American malady – a lack of faith in American unity – have led me in talking with you today to appeal for a clarification in your own minds of the true meaning of America and for a rededication to those shared convictions which are the sinews of our strength. Your support of the democratic values of which I have spoken will depend on your own conviction that these values are essential if men are to live and advance together in peace and good fellowship. If democracy and freedom are to survive the present struggle, it will be because the majority of people in the free world continue to believe in the basic concepts which are the heart and soul of democracy.

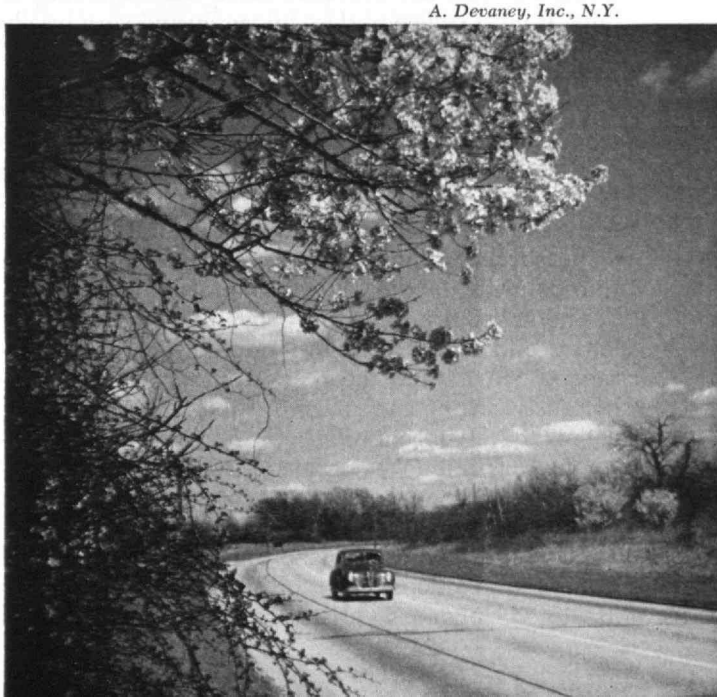
In the years you have been students in this institution, citizens in this community, you have found all about you evidence of the American outlook and philosophy which I have been describing. Your education and your living here have been shaped by these American concepts while at the same time encompassing the internationalism of science and scholarship. While you have been here, you have witnessed a mounting emphasis on our objective to make this a community where students not only acquire a professional education and learn the responsibilities of mature citizenship in the classroom, but actually practice these responsibilities in their day-to-day living.

You, as a class, have contributed importantly to our progress toward this goal by your responsible conduct and management of student affairs, by your wide-ranging interests, both professional and nonprofessional, and by your readiness to exercise the traditional M.I.T. freedom of expression and freedom to criticize. As evidence, I recall the seismic disturbance caused by an increase in dormitory rentals.

You have also been encouraged to think for yourselves and to think professionally. You have learned that to act without adequate knowledge of the true nature of things is not only foolhardy but dangerous.

(*Concluded on page 550*)

A. Devaney, Inc., N.Y.



Printing—the Mother of Progress

For All Its Contributions to Human Welfare, the Graphic Arts Industry Needs the Invigorating Rejuvenation of Research, Invention, and Reduced Labor Costs

BY ELBRIDGE W. PALMER

SYMPOSIUM ADDRESS

TAKING the major title of the symposium: "Access to Ideas – Is Reading Obsolete" and the subtitle of the section which I am to present: "Printing, the Mother of Progress," I must confess that I evolved that subtitle from the original suggestion, "The Present State of the Printing Industry," presented by William W. Garth, Jr., '36, chairman of this symposium. Should any of those present here today be involved in any branch of the graphic-arts industry, I am certain you will understand that the printing industry, in general, is today in much the same state of unrest, uncertainty, and indecisiveness as is our international diplomatic policy, as viewed from the position of a common citizen!

Yet I hasten to defend and to praise printing, and the entire graphic arts, for its past accomplishments, its current attempts at improving and expanding its technological advances, its potential promises toward a continuation and expansion of its contributions to the fields of education, recreation, and the permanent recording of all the advances in all fields of endeavor for all time. Assuming that the majority of those present today are but vaguely familiar with what we term, in an all-embracing sense "printing" perhaps it would be well to set the stage for the portrayal that is to follow.

The recording and the dissemination of knowledge are as old as man. We have not the time today to restate the laborious progress accomplished by man down through the centuries since the beginning of time. It must suffice to skim hurriedly and very briefly over the centuries until we reach the current stage of development. Dealing, as we are today, with printing, we may best pick up the origin of so-called printing from the historical record. Printing, historically, is one of the oldest arts, it being known that printing from blocks and clay tablets was practiced in China as early as 50 B.C. It is accepted as fact, although still disputed, that prints from wooden blocks appeared in Europe in the Sixth Century, assumedly from China.

The art of printing from movable types, whereby letters and characters of the alphabet might be arranged at will, and the types re-used, instead of laboriously cutting each page or subject as a unit, is of comparatively recent origin; the first claims to this invention in printing being made by the city of Haarlem, Holland, on behalf of one Lourens Janszoon Coster, reputed to have first made types of wood in 1423, and afterward of lead and tin, yet no actual printed productions of Coster have been produced or identified. Johannes Gutenberg is generally credited with the origination of movable types, it being known that he was active in the field of printing as early as 1438, and to have produced many books from movable types in Mainz, his native city, beginning about 1450. To Johann Faust and Peter Schöffer, associates of Gutenberg, is credited the substitution of metallic types cast in plaster molds for the originally cut or carved individual type characters as developed by Gutenberg; Schöffer also originated hard metal punches whereby duplicate type characters could be produced in the exact symmetry of the original design.

Printing "presses," a title denoting a printing shop, are reputed to have been in operation near Rome in 1465; in 1469 in Milan and Venice; in Paris in 1470, and in London in 1474 – the latter under the direction of William Caxton who was notable in after years for his fine printing.

With the development of printing in Italy came the change from the original type styles of the Germans, called Gothic, to the currently called Roman style about 1501, designed by Aldus Manutius of Venice. As might be expected, the early original type styles were close imitations of the hand-written script of that day; fortunately, the calligraphy of that day furnished excellent style models for the type characters, as it did for the style and balance of the printed page or subject. The Gothic-type Bible, with illuminated initials, generally credited to the Mainz plant of Gutenberg in 1455, is still considered one of the finest examples of book production of the past 500 years. Truthfully, it may be said that to Germany, and in later years and in some particulars to Italy in the Fifteenth Century, must be given generous credit for the early progress in printing styles and processes. France, early in the Sixteenth Century, forged into the lead in printing, with progress in that nation becoming decadent as a result of religious upheaval which drove many of the finest French printers into other countries. The Sixteenth Century is notable for the increasing and commendable development of the art of woodcutting or engraving, then the usual type of illustrating medium in books. All the Seventeenth and early part of the Eighteenth Centuries contributed little to the progress in printing. It is true that the names of Baskerville, Caslon, Bodoni, and Didot were identified during this period with the designing of new faces of printing types or in the modification of old ones. It was during this period that refugees from France, such as Plantin, re-established in Antwerp, came to be known for their fine printing, as did Wynkyn de Worde, William Caxton's successor after the latter's death. The beautiful

font of type still carrying the name of its designer, William Caxton, and much employed today, is but another example of the artistry and craftsmanship of that day.

But we must hasten down the historical road. It is of interest to note that the first printing press in the New World was established in 1539 by Juan Pablos in Mexico City; in our own United States in 1638 by Stephen Daye, right here in Cambridge, then close to Harvard College.

As in all industrial development, epochal inventions have greatly influenced the printing industry. The early printer had to design and build, or have constructed for his use, the types, engraved or hand-cut illustration blocks, the frames or "chases" in which he confined (locked) his type forms, the presses in which he achieved the transfer of the type and illustrative impressions to the paper; he had to make his own ink balls or rollers, probably compounded his own inks and adhesives. It is recorded that it was not until early in the Nineteenth Century that, with the advent of the metal hand press and the first flat-bed cylinder press, the printer ceased to be the inventor and producer of equipment and turned his attention more specifically to the production of printed matter. It was late in the Nineteenth Century, perhaps due to the separation of the making or casting of type from the printer and the establishment of type founding as a separate enterprise, that the point system of type measurement was introduced and generally accepted by printers. This system of measurement standardized types on the basis of approximately 72 points to the inch, with a 12-point type body occupying six lines to the inch; one sixth of an inch corresponds to the earlier designation of pica measurement – hence 12-point type is still called pica size.

The invention of paper-folding machines and other bookbinding equipment about the middle of the Nineteenth Century tended to separate the binding of books and pamphlets from the printing shops into binderies. By the beginning of the Twentieth Century, binderies began to separate into edition (quantity) book binderies, pamphlet and specialty binderies, and job shops handling individual and small lot binding and rebinding orders. During the first quarter of the Twentieth Century another specialized binding service was instituted; new books rebound into stronger bindings to withstand for longer periods the "more issuances" of library books.

The first, and obviously experimental, type-composing machines also made their appearance about the middle of the Nineteenth Century, resulting in the Mergenthaler Linotype (line-of-type) or line slug casting mechanism. Next came the Lanston Monotype (individual type character casting mechanism, activated by a paper ribbon perforated on a keyboard in advance of the type-casting step) which closely simulates the former individual hand-set type character. In 1810, Friedrich König, a German, perfected the application of steam power to the printing press; this press continued the flat-bed type form employed in hand presses but the paper was pressed against the type form by means of a revolving cylinder and the ink was automatically rolled over the type form. While the advent of this new printing press did not contribute to an improvement in printing quality, it did make possible production of printed matter in greater volume. Here in America, in 1846, Richard Hoe, an American, presented the first printing press in which the types were affixed by a special locking device in accurate cylindrical position, opposed to the impression cylinder around which the paper passed in effecting the impression. In England, in 1866, appeared the Walter press, the first press in which curved stereotype plates were affixed to the cylinder in the place of the type forms. With the application of steam power to presses, and the development of, first the cylinder type of impression for the printing press, and later the rotary plate cylinder, came increased progress in the development of printing equipment toward greater speeds, increased printing areas, and improved quality. It may be assumed that the development and establishment of newspapers (England is credited with the first weekly in 1622 and the first daily in 1702) contributed much impetus to the development of machine production in the printing field. The necessity for increased speed, capacity, and printing quality in one or more colors definitely acted as a stimulus to printing equipment invention and improvement.

It is feared that we have delved too long and too deeply into the development of the printing industry as we know it today; on the other hand, one cannot properly evaluate the current status of the entire graphic arts industry without reviewing a limited number of the basic beginnings and later developments. One further explanation is also necessary. Such involves the peculiarities and differences between the several printing "processes."

First, a basic definition of "printing"; the simplest and most understandable definition to my mind is this: "Printing is a process for producing multiple copies of an original subject on paper, fabric, metal, foils or other materials by mechanical means whereby the original (in reverse image) surface is inked and the image transferred to the paper or other material by uniformly impressing the full image to the material."

Next, three processes, determined by the printing surface employed, are recognized:

(1) *Relief,* commonly called *letterpress* printing, in which the impression is made from a raised letter or plate surface. This process accounts for the majority volume of printing for all purposes, although planographic and intaglio processes are competing vigorously in all fields at this, the middle of the Twentieth Century.

(2) *Planographic,* commonly called *lithographic* printing, in which a totally different principle is employed; the use of a practically flat surface of polished sensitized stone or synthetic stone, or of flat zinc or aluminum plates, all of which have a certain quality of porousness, and the affinity of the stone or plate to accept the transfer of the type and design images when applied in a greasy ink, while these same images as transferred reject water and accept ink in the process of inking and impressing the images on the paper or other materials; the watered or blank portions of the stone or plate reject all ink applications, leaving only the images to be printed. *Offset lithography* offers a distinct variation in the actual printing process

in that the impression is not made directly from the stone or metal lithographic plate but directly to a prepared rubber blanket, and "offset" or transferred a second time from the rubber blanket to the paper or material used. This variation permits lithographic printing on fairly rough surfaces, as well as smooth and coated papers, and presents a pleasingly smooth and diffused effect to the single and multicolor pictorial reproductions, while retaining desired solidarity to type and other plane-surfaced reproductions, as in relief printing. Usually included with descriptions of planographic printing are: collotype printing, in which a gelatin surface is employed and the image to be transferred varied by exposure to light; and pantone printing, in which portions of the surface not to accept ink are coated with mercury instead of water.

(3) *Intaglio,* commonly called *gravure* printing in which process the plate, either flat or cylindrical, is prepared with the type and illustrative images etched into the plate, below the surface plane. In actual printing, the plate or cylinder is inked over the complete surface and then hand or mechanically wiped; the recessed crevices of the plate accept and hold the ink, and in the making of the impression to the paper or other material the ink is transferred by capillary action, that is, the ink is sucked out of the plate crevices and transferred to the material.

A fourth, and entirely new process made its appearance in 1948: this is titled *xerographic* printing. This process is still in the stage of development for application in the commercial field. It is claimed that this process eliminates the need for intermediate stereotype matrices or chemically etched engravings as employed in relief printing. The image to be reproduced is transferred electronically to a positive charged, sensitized plate, and the plate is developed by a special powder, charged with negative electrons. The powder adheres, in the desired image, to the plate. To obtain a print, paper or other material is laid over the plate and subjected to the electron rays which transfer the powder to the paper or other material. The image is made fast with moderate heat and the entire process requires but 45 seconds. It is further claimed that plates for this xerographic process can be made from a typewriter, using a photoconductive carbon paper, and can be worked in with one of the new typewriter type-composition processes.

Time does not permit exploring the steps employed in the two major processes generally employed in transposing the typed manuscript into either the slug or the individual type character composition preparatory to printing, nor the dozen or more quite new inventions in photomechanical type composing. Mention has already been made of the Linotype slug line and of the Monotype individual type character assembly for printing. Not far from where we gather today, right here in the city of Cambridge, and under the direction of Mr. Garth, there is being assembled today the first prototype machine for effecting type composing with a resulting photomechanical film, from which transfers are readily made to planographic (lithographic) plates, and from which etched magnesium plates are easily, quickly, and inexpensively made for relief (letterpress) printing. It is generally conceded that the slow, laborious, and relatively expensive steps in the process of translating typed manuscript into printed matter, which have continued with little change for many decades, are due for an early and a very epochal change in printing plants over the nation, from the newspaper and magazine plant to the book and commercial printing shop.

Similarly drastic and advanced changes are in the offing for the processes of electrotyping, photoengraving, and especially in the fields of black and multicolor printing. The old flat-bed, two-revolution, reciprocal action single and two-color presses, the old style perfecting presses (those that print both sides of a sheet during one trip through the press), and even the old-type letterpress and lithographic rotaries are being rapidly replaced with the newer styles of rotaries in single and multicolor possibilities, with equal quality results and much higher speeds, many including integral folders which enable the press to deliver the folded signatures ready for binding.

The size and scope of an industry, almost without exception, directly affect the volume and extent of collective and individual plant research continuously undertaken, the extent of the employment of new inventions, new processes, and new materials. The graphic arts industry, generally, despite its considerable size and the vital part it has played for centuries in the advancement of culture, education, and recreation, has been notably lacking in extensive effort in research and invention until the opening of the Twentieth Century. True, more demonstrated progress has been made here in America beginning with the Nineteenth Century and to date, than in the rest of the world as a whole. Research and invention, and the resulting improvements in equipment and processing, have accelerated rapidly in the second quarter of this, the Twentieth Century, and it appears that we will make much greater and still more rapid progress in the next quarter-century.

Just how big and relatively how important is the graphic arts industry among its sister giants of the industrial field in America? Let's glimpse a few statistics from which may be gleaned a quick evaluation.

In 1943, when the War Production Board was charged with the determination of the essentiality of the graphic arts industry as a whole, it was determined (based on the 1939 Census of Manufacturers) that there were then a total of 27,855 printing and publishing plants doing an annual volume of business in excess of $5,000 and a total of 15,003 establishments having an annual volume of less than $5,000. These 42,858 establishments employed a total of 598,963 persons in all capacities, paid out annually a total of $953,500,000 in salaries and wages, used materials costing a total of $1,100,000,000, and marketed products and services valued at an annual total of three and a quarter billions. The over-all industry stood second in rank among the industries of the nation as to number of establishments, and fifth as to value added by manufacture ($1,835,000,000).

Glancing solely at the book publishing and manufacturing industry, as a simple measuring stick for comparison, one finds from the 1947 Census of Manufacturers, that during that year 648 book publishers did a gross business of $464,000,000, selling a total of 277,450,000 hard-bound books, and 209,766,000

pamphlets. It is of interest to observe the types of books sold:

Textbooks – elementary, high school, college and workbooks	139,145,000
Religious books – Bibles, Testaments, books, and hymnals	41,543,000
Technical and professional	17,467,000
Mail order, including book clubs	54,429,000
Subscription books and sets	14,626,000
Trade books – adult 140,414,000; juvenile 53,752,000	194,166,000
Other books and pamphlets	402,290,000

When one also notes that 554 book publishers in 1939 had gross sales of $155,000,000 compared with sales of $464,000,000 in 1947, some idea of the increase in dollar volume, quantities distributed, and other changes are evident. Impressive also is the tonnage of paper consumed by the book industry alone; in 1947 a total of 251,634 tons of paper went into books – equal to 84,000 single 30-ton capacity minimum cars. Being but a lowly bookmaker I did not overlook the reported fact that the publishers manufacturing cost for the mechanical production of those 487 million books was $87,000,000 in round figures, or about 20 per cent of the publishers' gross intake.

Notwithstanding the facts offered with respect to the size and relative standing of the graphic arts in the over-all industrial pattern in this nation, one must consider the somewhat peculiar, long-term handicap of the printing industry. Down through the centuries, certainly until the late Nineteenth and early Twentieth Centuries, printing developed more or less as an art, rather than as an industrial science. The original guild precept of Europe, and especially England, had a definite effect on retarding the more rapid technological development of the printing industry. Hand, or semihand processing continued to be practiced in many plants in particular printing and binding operations long after the increased demands for productive volume gave loud voice to the need for discarding such outmoded procedures. Even as of today, one finds in many specialized shops in this country, and more so in England and on the Continent, a strong aversion or resistance to change. Happily, only dim vestiges of the old order remain and are distinctly apparent in America.

Printing and binding costs have steadily and generously increased down through the years. In 1920, for example, a journeyman bindery machine operator in New York City worked 48 hours per week and his usual weekly stipend was $24. By 1931 that had changed to $48 for male workers and $29 for female workers, both still on a 48-hour week. From 1941 to 1947 alone, according to responsible estimates, the wage-rate pattern increased from 60 to 93 per cent, while the weekly hours of work declined to 40 generally, and in many cities to 37½, 36¼, and even to 35.

With equal or more drastic cost increases in materials, packaging, transportation, rents, advertising, clerical, and other administrative and operative salaries, and the many other cost factors in the writing, editing, publishing, selling, and distributing of newspapers, periodicals, books, pamphlets, and all other forms of the printed or reproduced word and illustration hitting the entrepreneurs responsible for all forms of publishing, "Printing, the Mother of Progress" seems to be in a very bad way today.

Obviously, the publishers of newspapers, periodicals, and other mediums which derive their major income, not from the per unit sales price, but from the more easily adjusted income from advertising, are not nearly as conscious of the steadily advancing wage costs in manufacturing production as are those publishers whole sole income is dependent upon the volume of sales at so-much-per-copy-sold. Such conditions are readily observed by the manufacturers, particularly the competitive bookmakers, whose bread-and-butter business with their book-publisher clientele depends wholly upon an ability to produce within a strictly competitive range or pricing for their services and the materials they furnish. Constantly increasing journeyman wage rates in the newspaper field alone are continuously used as pressures upon the book, commercial, and specialty graphic arts establishments. The actual mechanical costs of such publications as depend upon advertising revenue are much less important to such owners as to the other groups mentioned.

In the face of a seemingly continuous pressure to lower working hours and to increase wages – despite the blocking or lowering of the well-known cost-of-living – and the higher costs of materials and all other factors, it may safely be predicted that the printing and binding fields of the entire graphic arts industry must exercise greater effort in inventing and developing better mechanization in all operations, and especially in every processing and handling step

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Photo by Harold M. Lambert



Is Reading Obsolete?

To a Large Extent, the Various New Mediums of Communication Are Complementary Rather than Mutually Exclusive

BY ANDREW HEISKELL

SYMPOSIUM ADDRESS

THE question, "Is reading obsolete?" is being raised by many persons today. Those who ask it, I suspect, are using the phrase in a narrow sense. They are really suggesting that the mass of our population is no longer reading, by which they mean using their eyes for intellectually and orally elevating purposes. As a purveyor of mass journalism, any answer I might give would be suspect. I would like, however, to be permitted to quote two highly reputable authorities on this subject.

The first says: "A multitude of causes unknown to former times are now acting with a combined force to blunt the discriminating powers of the mind, and unfitting it for all voluntary exertion, to reduce it to a state of almost savage torpor. The most effective of these causes are the great national events which are daily taking place, and the increasing accumulation of men in cities, where the uniformity of their occupations produces a craving for extraordinary incidents which the rapid communication of intelligence hourly gratifies." The second authority states: "The faculty of attention has utterly vanished from the general Anglo-Saxon mind, extinguished at its source by big, blatant journalism, the newspaper and the picture magazine; illustrations, loud simplification; prose that is careful to be in the tone of, and with the distinction of, a newspaper or bill-poster advertisement; these, and only these, 'stand a chance.'"

These two eminent witnesses are William Wordsworth writing in 1802 and Henry James writing in 1902. The question is now once again brought into sharp focus by the advent of television. Innumerable surveys "prove" that the man who owns a television set rarely reads, hardly ever goes to the movies, barely glances at magazines, and though he may still buy a few newspapers, he gives them only a cursory once over. Had further questions been asked, I strongly suspect that this poor television set owner would have been shown dying of insomnia and malnutrition because he no longer has time to eat and sleep. What these surveys *do* prove is that the survey experts and most of us are weak on logic and all too easily translate correlation into cause and effect. We say, without hesitation, that if television attendance is increasing while movie attendance is dropping, the former is *ipso facto* the cause of the latter. It was only recently that some genius in the survey field discovered that movie attendance had dropped as much in the areas where television does not exist as it had in cities where there was television.

Since Henry James wrote those doleful words in 1902, the American people have digested the advent of the automobile, the telephone, motion pictures, radio, and scores of less important developments in the field of communication. The people today own 40 million cars, they spend 16 billion hours a year listening to the radio, and buy 4 billion movie tickets a year. Yet, during these 50 years, the circulation of daily papers has gone up over five times, and that of general magazines about 10 times, and the number of books and pamphlets published per year has increased fivefold.

I suggest, therefore, that the only theory which can satisfy these statistics is that the new developments in the field of communication are successful only to the extent that they fill a vacuum. If we go back to 1900 we see a country in which most of the adult male population walked to work. Whether this motion was accompanied by mental activity is unanswerable. However, as soon as the working man took to riding to the plant in a trolley or subway, he found himself wondering what to do with his hands and eyes and perhaps, his mind. The tabloids took care of that problem.

Some years later, his work week was cut down and his earnings increased, thereby creating another vacuum which the automobile filled in part. His wife, having replaced the wood stove with a range, and having bought an icebox, a washing machine, and a vacuum cleaner had spare time on her hands. Today she, nevertheless, continues to complain of being tired in the evening. The reason is not heavy work but the emotional exhaustion resulting from listening consecutively to the trials and tribulations of the heroines of five soap operas.

Until the advent of television there were still plenty of people who would spend the evening smoking a pipe and staring into the distance. But today these persons are watching Colorado's Mountain Man tearing off the ears of Boston's Irish Gargantua in a televised wrestling match.

This increase in leisure time explains, from the quantitative point of view, man's ability to take on so many new forms of activities. In 50 years, man's work week has dropped from 60 to around 38 hours. The new mediums of communication have rippled outward to encompass those persons who, in 1900, were informed by conversation only. As man would no doubt go crazy if he devoted these additional 22 hours of leisure to concentrated thought, it is probably just as well that most of the new vacuums have been filled

with these more or less passive forms of entertainment and information. The only real victim to date of these inventions has been the art of social graces. In 1900, evenings among the relative elite were spent listening to a guest reading Burns, to the young lady of the house singing or playing the piano. Members of the upper-class family had to excel at elocution, card tricks, hypnotism, or palm reading. The working class worked, ate, and slept. Even the better bourgeois did not fare so well, as an excerpt from the Lynds' *Middletown* testifies. Speaking of the wife of one of the city's leading citizens, it says: "A regular sight summer mornings with a friend out in her gig, shelling peas while her horse ambled along the road." Today practically the only form of social interchange that exists is bridge and canasta. They will no doubt capitulate to television.

All of these statistics do not answer the question, "Is reading obsolete?" Quantitatively, it obviously is not. Modern man is devouring an enormous poundage, or perhaps I should say tonnage of printed matter. In fact there is a prevalent theory that if the quantitative curve continues upward at the present rate, our population, half of which now wears glasses, will be blind within 100 years.

But the question that many are asking is, "What does all this mean from a qualitative viewpoint?" One answer to the question would be to examine the "best sellers" list over the years. The first surprising discovery is that from the best estimates available over a period of 280 years the best sellers have consistently been bought by one per cent of the United States population. Specifically, in the late 1600's Bacon's *Essays* sold 1,000 copies; in the middle of the Seventeenth Century Richardson's *Pamela* sold over 10,000 copies, and 100 years later Dickens' *David Copperfield* sold 225,000 copies. In this past decade, best sellers over the 1,300,000 mark were James Hilton's *Random Harvest*, Douglas' *The Robe*, Jan Struther's *Mrs. Miniver*, and four Pocket books including one on *New Adventures of Ellery Queen*, *The Pocket Book of Boners*, and also *The Pocket Book of Verse*.

The indication here would be that literacy and intellect were synonymous three centuries ago but not today. But then why should one expect the literary intellectual elite to be a constant percentage of the population. A historian wrote recently of Henry James: "A very distinguished author, he enjoyed an immense prestige and suffered from a paucity of readers." This phrase is today equally applicable to Auden.

But to conclude from this that present day mediums of communication are all deficient is erroneous. *Life's* managing editor has on the wall of his office a sign saying: "Never overestimate the reader's knowledge. Never underestimate his intelligence."

The basic error of the critics of the present state of affairs is to assume that if a man has intelligence but no education he is, nevertheless, prepared to enjoy James, Auden, Horizons, Einstein or Toynbee. Our editors know that the only limit to people's interest in any subject is our ability to present it in the frame of reference of the reader's knowledge. Our experience has been that our readers have enjoyed a 10-part, 200-page treatment of the history of Western culture, that they have not been appalled by a 20-page essay on the atom, or a 10-page story on Arnold Toynbee's theories. The combination of an increasingly high educational level and good presentation has given the Sunday *Times* a circulation of more than 1,000,000. While you and I may complain about the tabloids or the comics, let us remember that they are mainly an introduction to reading. If Dr. Killian were to spend all his time on comics and tabloids we might have cause for worry. However, the fact is that most of the readers of these mediums would otherwise read nothing. A small percentage at least graduate each year to better publications. And if you seek further consolation, I should mention that comics which originated with a strip called *Yellow Kid* – from which came the term, yellow journalism – have now developed to the extent that a comic, *Dagwood Splits the Atom*, is a prime educational force in helping people to understand atomic energy. Incidentally, General Electric is using comics to give technical training to their employees.

The question that faces us is not whether reading is obsolete but whether education and its adjuncts, the various mediums of communication, can keep up with the constantly increasing demands that are put upon democratic society. Most of us feel that words are an adequate and respectable method of communication – a method that should satisfy all needs. The fact is there are too many people who need to be educated and informed too rapidly for words to do the job. The various techniques of communication were never more vitally proved out than in World War II when suddenly millions of Americans had to learn to fire an M-1, use a compass, read a map, learn about scouting and patrolling, know how to recognize aircraft. All this education had previously been done with pamphlets – usually 200 pages of small print for each subject. The Army called on us to help, and jointly we put out giant picture portfolios with telling pictures, each visualizing an idea, and terse text explaining the meaning of each picture.

These portfolios, and training films, upped the technical competence of the G.I. while allowing a reduc-

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H. Armstrong Roberts



The Promise of Technology

We See Proof Everywhere that Technology Will Not Fail to Bring Us What We Have the Wisdom and Strength to Strive for

BY LUIS DE FLOREZ

SYMPOSIUM ADDRESS

My assignment in this symposium seems to call for some measure of prophecy concerning the future of printing. If I am unwilling to venture a prediction, however, it is not so much because my experience in the graphic arts is recent and limited, but rather because it seems unwise and unnecessary to speculate with our future efforts when there are better and safer ways of blazing the road to progress.

The promise of technology is always fabulous, but it goes without saying that unless it is intelligently directed toward useful accomplishment, it serves to little purpose. Technology, like Aladdin's genie, is the slave of man, not his master, as some would believe. The problem which really confronts us is not to guess what the future has in store, but to formulate the answer to the question, "What do we want technology to do for us from now on?"

The only sure way to find this answer is neither dramatic nor easy. It is to be found in the result of continuous and systematic research – long-range fundamental studies to provide orientation and objectives, and the more specific study and experiment to develop systems, processes, and equipment to achieve the objectives.

To start from the beginning, Webster tells us that the graphic arts are those "which pertain to the expression of ideas by means of lines, marks, or characters impressed on a surface." We might say that the hand-written letter and the artist's painting are, in a broad sense, examples of the graphic arts, but the industry which we are discussing today is one which has grown up around the idea of mass reproduction and distribution of the creative work of the individual, rather than the production of the original itself. Basically, this is the purpose of the printing press, but we can readily see that printed matter must be put together in some acceptable form for distribution. Consequently, there is a lot to be done besides printing to make it possible for the press itself to serve its purpose.

The graphic arts industry, which concerns itself with all of the steps required to bring printed expression to the individual, is one of our major industries, ranking near the top – not only in economic importance, but in its effects on all of us. It is simple enough to visualize the revolutionary effect of the invention of printing on the world's history, but not always do we realize that its impact on civilization became universal only when its technological development reached the point where mass production and distribution became possible.

In the course of time, the written word and picture have assumed many forms and have been reproduced in many ways by hand and by machine. They have served not only to convey current information and thought, but to stir the emotions, and as a means of perpetuating knowledge. There is no reason to expect that these functions will ever change, but the centuries in which the printed word had no substantial competitor for communication and the distribution of knowledge have come to an end. From now on, the graphic arts must face the formidable and growing competition of radio, television, the motion picture, recorders, and new mechanical devices for teaching and training.

The effect of this competition is already suggested by the figures of the United States Department of Commerce for national income by industry which show that the printing and publishing industry, rated fifth in 1939, now holds ninth place on the same list. We come to the conclusion, therefore that the future position of the industry will depend to an increasing extent on its ability to cope with the competition of other means of expression.

Two courses lie ahead: (1) to accept what appears to be the inevitable and natural course of events, and gradually decline in favor and scope to some stable mediocrity; or (2) to make the effort required to find new and more appealing means of graphic presentation to capture some new segment of popular interest, or at least to recapture some of the ground lost.

It is fair to say that the industry has always striven for better presentation, but it is apparent that efforts in this direction have neither been effectively directed, nor of sufficient magnitude to produce the kind of result the situation calls for. If we are to direct technology to the improvement of printing techniques and set it to work on the creation of processes and machinery to enhance quality and reduce cost, we should first provide a firm base to start from and a hopeful outlook.

At no time in history has there ever been so much knowledge or talent available for basic research of this character, nor greater ability to organize it. It cannot fail if adequate support is provided. The basic research suggested is not within the capabilities of any one man, or even by a number of men with the same background of training and occupation. The philosophy of making printed matter more effective in all its objectives can only be developed by a team composed of specialists in different fields. The psychologist, the advertising man, the publisher, the reader, the author, the educator, and thinkers of still other fields, must be brought together to study new ways of presenting and transferring ideas and knowledge graphically. Their program should disregard all tradi-

tion, and should begin with the basic psychological investigation into the general subjects of comprehension, training, readability, and perception. It would necessarily include the study of characters, format, colors and color contrasts, illustration, and even the study of such devices as strip presentation, which has such strong appeal to the children of every age.

Are the forms of printing in common use today the most effective in conveying information? Are the characters in use, and their disposition on the printed page, designed to give the greatest facility and greatest appeal to the reader? What new forms of printing can be devised to better serve the purpose? Are we training our future readers to best advantage to comprehend printed matter? Questions such as these are perennial and must be reviewed constantly, for the tastes and customs of people will change with the passage of time – sometimes unnoticed until suddenly we become aware of a result.

Tradition has decreed, for instance, that the proper arrangement for the printed word should be in the form of lines of type arranged in such manner that the ends of the printed lines on the page begin and end at straight vertical boundaries. Recent investigation by a group at Tufts College has indicated that printed matter is actually easier to read and comprehend if the lines of print are disposed in such manner that they are centered on a vertical line at the center of a column without reference to the evenness of the edges. A page carrying two such columns of printing is not only preferable to comprehension, but carries as much printed matter as the conventional format. We know that it is now possible to teach children, also adults, to read at extraordinary speeds by training their eyes to grasp the meaning of lines instead of words, and even to comprehend entire paragraphs at a glance.

During World War II we found it possible to teach instant recognition of aircraft by flashing their pictures on a screen, decreasing the intervals of time of the projection until only one hundredth of a second was required for recognition by the average trainee. The combination of new forms of presentation and new methods of educational training deserves profound consideration and continuous long-range study.

We should not expect long-range research to terminate in final answers, but consider it as a continuous exploration which would establish a trend and, from time to time, point to the need for specific developments for adoption by the industry. Neither should we attempt to predict the results of such investigations, but simply admit the possibility of improvement and

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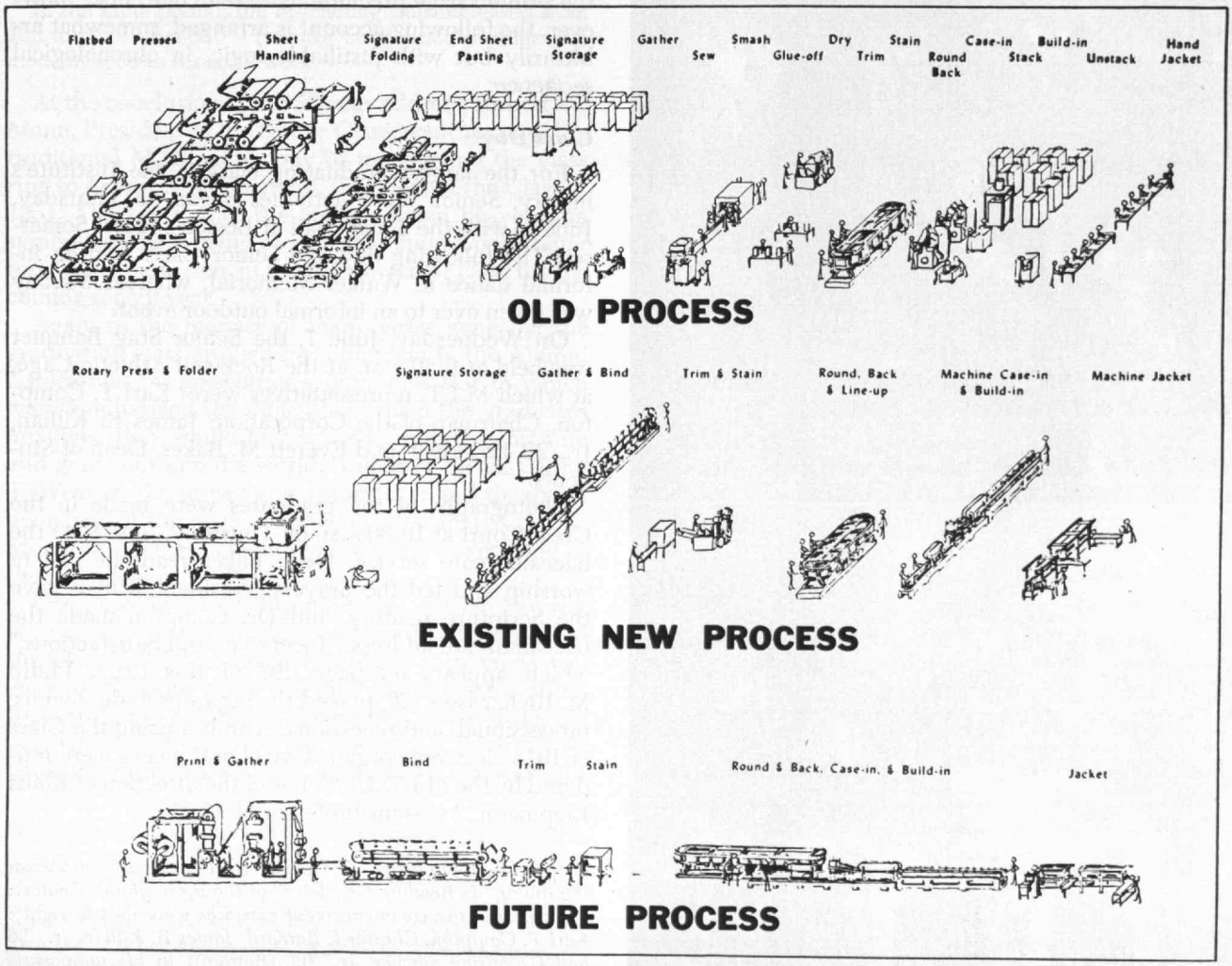


Diagram giving visual impression of the savings of time and personnel which can be made in book manufacturing through full employment of research and invention in this field. The top diagram illustrates old processes of manufacture which can already be greatly simplified, as shown in the center, through improved techniques of folding, gathering, and binding. At the bottom are indicated the possibilities of future processes which almost completely mechanize book manufacturing.







Alumni

In mid-June, during a series of those perfect days about which James Russell Lowell penned his famous lines, M.I.T. awarded degrees to the largest graduating class in its 86-year history, while the Alumni Association celebrated 75 years of continuous and successful operation by scheduling class reunions, a thought-provoking symposium on the graphic arts industry, and a banquet at which progress at Technology and the Development Fund Program were reported respectively by James R. Killian, Jr., '26, President, and Marshall B. Dalton, '15, chairman of the Committee on Financing Development. Interspersed with these main events were many other enjoyable and illuminating activities of, perhaps, more restricted popular appeal, such as the reunions and forums staged by eight departments, the dedication of the Dugald Caleb Jackson Room (recorded on page 522), the President's meeting for Honorary Secretaries, and the admission of a new class to the fold of Technology Alumni. On the basis of merit, each event might well lay claim to primal narration. Since the limitations of the printed page preclude more than one "first," however, the following account is arranged, somewhat arbitrarily but with justifiable logic, in chronological sequence.

Class Day

For the largest graduating class in the Institute's history, Senior Week activities began on Thursday, June 1, with the Senior Ball at Boston's Hotel Somerset. The following day, the Senior Class held an informal dance in Walker Memorial, whereas Sunday was given over to an informal outdoor event.

On Wednesday, June 7, the Senior Stag Banquet was held at 6:30 P.M. at the Rockwell Athletic Cage, at which M.I.T. representatives were: Karl T. Compton, Chairman of the Corporation; James R. Killian, Jr., '26, President, and Everett M. Baker, Dean of Students.

Photographs of the graduates were made in the Great Court at 10:30 A.M. on Thursday, June 8. At the baccalaureate service, Dean Baker read the call to worship and led the prayers, President Killian gave the Scripture reading, and Dr. Compton made the baccalaureate address, "Incentives and Satisfactions," which appears on page 497 of this issue. Philip M. Richardson, '26, played the organ prelude, hymns, processional, and recessional marches using the Class of 1918 electronic organ. Two choral pieces were rendered by the M.I.T. Choir under the direction of Klaus Liepmann, Assistant Professor of Music.

(Top): Life's *publisher, Andrew Heiskell, attempts to answer the query, "Is Reading Obsolete?" at the symposium.* (Center): *Principals in the commencement exercises were* (left to right): *Karl T. Compton, Chester I. Barnard, James R. Killian, Jr., '26 and C. Adrian Sawyer, Jr., '02,* (Bottom): *In his symposium address, Admiral Luis de Florez, '11, tells how technology can benefit the graphic arts, while listeners include* (left to right) *William W. Garth, Jr., '36, symposium chairman, Colonel E. W. Palmer, and Mr. Heiskell, symposium speakers.*

Day, 1950

At 2.00 P.M, graduates and members of their families gathered in Morss Hall, Walker Memorial, for the traditional Class Day exercises in which, in a program in light vein, the graduating class was formally inducted into the M.I.T. Alumni Association. As organist, Dr. Richardson played the opening selections, and Thomas J. McLeer, Jr., '50, chairman of the Senior Week Committee, made the introductory welcoming address. As representative of the 50-year Class, Professor Emeritus George E. Russell,'00, acquainted the audience with some of the early history of the Institute and the conditions of student life of half a century ago. In commenting on the growth of the Institute during the past 50 years, Professor Russell said:

> In the 31 years previous to the year that favored the world with the graduating class of 1900, there had been but 2,100 graduates. Tomorrow you will swell this number to more than 33,000.
>
> Likewise the number of names on the lists of the Alumni Association has jumped from around 7,000 to approximately 53,000 – of whom more than 43,000 are living.
>
> In the same period, the instructing staff increased from 138 to more than 860 – to make no mention of some 365 men engaged in research work.

At the conclusion of the 50-year address, Robert W. Mann, President of the Senior Class, went through the traditional M.I.T. ceremony of transferring the class ring to Arthur A. Wasserman, President of the Class of 1951. The transfer of the large wooden beaver ring symbolizes the passing of authority and responsibility for student government to the new senior class for the coming school year.

Again in the manner of many years gone by, the graduating class applied for admission to the Alumni Association by presenting a humorous skit in which were emphasized the difficulties which the graduates imagined they would face when leaving the Institute and going out into the world. Author of the skit, John T. Weaver, '50, served also as producer and theatrical manager for the dozen or so who participated in *The March in Time* which lampooned radio advertising of the more obnoxious kind.

Upon conclusion of this playlet, C. Adrian Sawyer, Jr., '02, President of the Alumni Association, presented the Class of 1950 banner to Mr. Mann as token of welcome of the new class into the Alumni Association. Richard P. Price, '25, then gave the address of the 25-year Class by surveying general events at the Institute (and throughout the world generally) a quarter of a



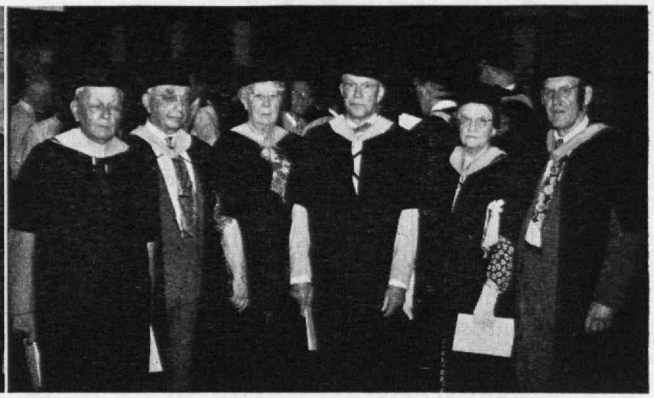






(Top): *Robert W. Mann, President of the graduating class, transfers the senior ring to Arthur A. Wasserman, President of the new Senior Class in Class Day ceremonies.* (Top center): *Lunching informally in Du Pont Court are* (in usual reading order): *Lewis E. Moore, Claude E. Patch, William M. Bassett, Arthur L. Collier, Frederick H. Hunter, C. Adrian Sawyer, Jr., and Grant S. Taylor–all members of the Class of 1902.* (Bottom Center): *The registration desk in the Rogers Building was the focal point of interest on Alumni Day.* (Bottom): *General view of the luncheon in Du Pont Court from roof of Building 1 where Alumni Association is housed.*





Assembled for Class Day exercises are (left to right): *Thomas J. McLeer, Jr., chairman, Senior Week Committee; Professor Emeritus Russell, Class Day speaker for 50-year Class; Robert W. Mann, President of the Class of 1950; Richard P. Price, Class Day speaker for 25-year Class; and Mr. Sawyer. More formally, in cap and gown, members of the Class of 1900 who marched in the commencement exercises included* (left to right): *Zenas M. Briggs, Mortimer Silverman, Jane H. Bartlett, Stanley G. H. Fitch, Clara I. Durgin, and Elbert G. Allen, Class Secretary.*

century ago. Speaking for his Class, he warmly welcomed the graduates to the company of M.I.T. Alumni.

Ivan J. Geiger, Director of Athletics, then made the Class of 1948 presentation to the outstanding athlete of the year. The award is made each year "to the member of each graduating class who has best exemplified through athletics those traits of leadership and character which we deem essential to the educational ideals of the Massachusetts Institute of Technology." Based on the qualifications of leadership, character, athletic achievement, and athletic improvement, this year's award went to John H. MacMillan who had won three varsity letters in basketball, three varsity letters in baseball, numerals in the freshman tennis team, numerals in intramural swimming, and concluded his athletic activities as captain of the 1950 baseball team. Honorable mention was given to Robert C. Weber, for crew; John O. Adams, Jr., for track; Donald C. Lea, for hockey and lacrosse; Alphonse J. Dell'Isola, for track; and Edwin A. Corrie, for golf and basketball.

In concluding the Class Day exercises, Joseph S. Gottlieb gave the Beaver Oration which briefly summarized activities of the members of the graduating class during their four years at the Institute.

Commencement

On Friday morning, June 9, more than 5,000 Faculty members, students, and guests filled the Rockwell Athletic Cage to overflowing in witness of the commencement exercises of the largest graduating class in the Institute's history. To the organ accompaniment by Harry U. Camp, '18, Mr. Sawyer led the academic procession of the guests of honor, members of the Class of 1900, officers of the Class of 1925, members of the Faculty, and the graduating class.

The invocation was given by the Most Reverend John J. Wright, Bishop of Worcester. The commencement address (which appears on page 500 of this issue) was given by Chester I. Barnard, President of the Rockefeller Foundation. The oath of office in the Officers' Reserve Corps and the Air Force Reserve was administered by Lieutenant Colonel Burton B. Bruce, '38. As chairman of the Corporation, Dr. Compton made the presentation of 1,257 degrees to 1,225

Celebrating 60 years since their graduation from M.I.T., at near side of table with backs to camera, are (right to left): *Harry B. Burley, Mrs. Harry M. Goodwin, Mrs. Franklin W. White, John L. Batchelder, John G. Crane, Henry W. Clement, Mrs. Grant, Harry L. Grant, '00, Mrs. Newhall, and Charles A. Newhall, '00. At far side of table facing camera are* (right to left): *Charles W. Sherman, George A. Packard, Class Secretary, Frank M. Greenlaw, Willard C. Tilson, Chester V. Carlton, Spaulding Bartlett, Arthur C. Walworth, '00, Sidney E. Horton, and William P. Flint. Those grouped at the right are, in reading order: Steven R. Berke, '16, Joseph S. Ullian, Joseph W. Barker, '16, Mrs. Barker, C. Clinton Carpenter, '16, C. J. Carpenter, and Marshall S. Wellington, '16.*







Women graduates who marched in the commencement procession were (left to right): *Virginia G. Stevens, Dorothy W. Pelzer, Kathleen M. Black, Betty J. Fax, Barbara F. Van Tassel, Mrs. Mary A. S. Davison, (whose degree was awarded in September, 1949), Natalie J. Adelman, and Cecily M. McL. Cannan. At right, President Killian congratulates John M. Rau, Jr., of Chicago, who received three degrees from the Institute at this year's commencement exercises.*

graduates. Major General Frank A. Keating, Commanding General of the New England Subarea, made the presentation of reserve commissions, and President Killian concluded the ceremonies with the farewell address. The Review is happy to be able to bring this important message to its readers on page 503.

During the commencement ceremonies, the following number of degrees was awarded: doctor of philosophy, 49; doctor of science, 39; advanced engineering degrees, 40; master in Architecture, 3; master in City Planning, 11; master of science and bachelor of science, 29; master of science, 184; bachelor in Architecture; 14, bachelor of science, 856. The graduating class included 32 students who received two degrees simultaneously. As the first student in the Institute's history to receive three degrees at the same time, John M. Rau, Jr., of Chicago, won the unusual distinction of receiving the degrees of S.B. and S.M. in Electrical Engineering, and S.B. in Business and Engineering Administration.

On the distaff side the unusual number of eight young ladies marched in the procession to receive M.I.T. degrees as follows: Cecily M. McL. Cannan, Ph.D. in Biology; Mrs. Mary A. S. Davison, Ph.D. in Chemistry, (degree awarded in September, 1949); Betty J. Fax, Ph.D. in Chemistry; Barbara F. Van Tassel, Ph.D. in Chemistry; Dorothy W. Pelzer, master in Architecture; Natalie J. Adelman, S.B. in Building Engineering and Construction; Kathleen M. Black, S.B. in Chemical Engineering; Virginia G. Stevens, bachelor in Architecture.

Meeting of the Honorary Secretaries

The President's annual dinner for Honorary Secretaries and M.I.T. club officers began with a business meeting at 4:30 P.M. on Sunday, June 11, at the Brae Burn Country Club in Newton. As chairman of the meeting, Professor Julius A. Stratton, '23, Provost, called upon various members of the M.I.T. Faculty and staff to discuss means for improving relations with principals and headmasters of preparatory schools, and especially with students in secondary schools who may elect to study at M.I.T. In discussing means of interesting promising students to study at the Institute, Professor B. Alden Thresher, '20, Director of Admissions, made it clear that, although the number of applications for admission has exceeded the number who could be accommodated, there was still a problem of recruiting a sufficient number of young people of such caliber as would benefit most from the Institute's in-

This informal luncheon septet includes (left to right): *Mrs. Bond, Mrs. Pearson, Hugh S. Ferguson, '23 Harold C. Pearson, '23, John A. Lunn, '17, President-elect of the Alumni Association, Mrs. Ferguson, and Horatio L. Bond, '23. At the President's Luncheon for the 50-year Class were* (left side of table, front to rear): *Mrs. Russell, Chester A. Richardson, Levi B. Jennings, Frederick I. Merrick, and Mrs. Merrick; whereas at the right* (front to rear) *are: Professor Emeritus Russell, Frederick D. Lawley, Mrs. Lawley, Mrs. C. Burton Cotting, Theodore W. Brigham, Mrs. Blair, Mrs. Atwood, Robert S. Blair, George D. Atwood, Mrs. Porter, and John L. Porter. Mr. and Mrs. Charles E. Smith are at the far end of the table.*





As usual the Stein-on-the-Table Banquet concluded events of Alumni Day, 1950, and again, as usual, the highly prized souvenir steins were designed by Henry B. Kane, '24. But the locale of the banquet was the Copley Plaza where 800 Alumni gave many a rousing cheer. Seated at the banquet table, in usual order, are: Hugh S. Ferguson, '23, Professor Emeritus George E. Russell, John A. Lunn, '17, Rudolf F. Haffenreffer, '95, Andrew Heiskell, Charles E. Smith, '00, Thomas C. Desmond, '09, Karl T. Compton, and C. Adrian Sawyer, Jr., '02.

struction. Thomas P. Pitre, Dean of Freshmen, acquainted the Honorary Secretaries with the Institute's policy of awarding freshman scholarships which annually account for approximately half of all endowment return available for M.I.T. scholarships. In addition to substantial scholarship aid to freshmen, those students who achieve a satisfactory scholastic standing may qualify for scholarship aid or loans in the later years, thereby reducing the cost of an M.I.T. education.

Speaking of student life at the Institute, Dean Baker stated that Technology is rapidly becoming a place where all the students who choose to do so may be able to live in dormitories adjacent to the Technology buildings. As a further indication of the well-rounded activities which the Institute provides to its student body, it was recalled that the M.I.T. athletic program now engages approximately two thirds of the student body as active participants in intramural or varsity sports – a state of affairs achieved by few colleges in the United States. Dean Baker also outlined a plan now under study for assisting students to earn some of the costs of tuition and living expenses during their student days.

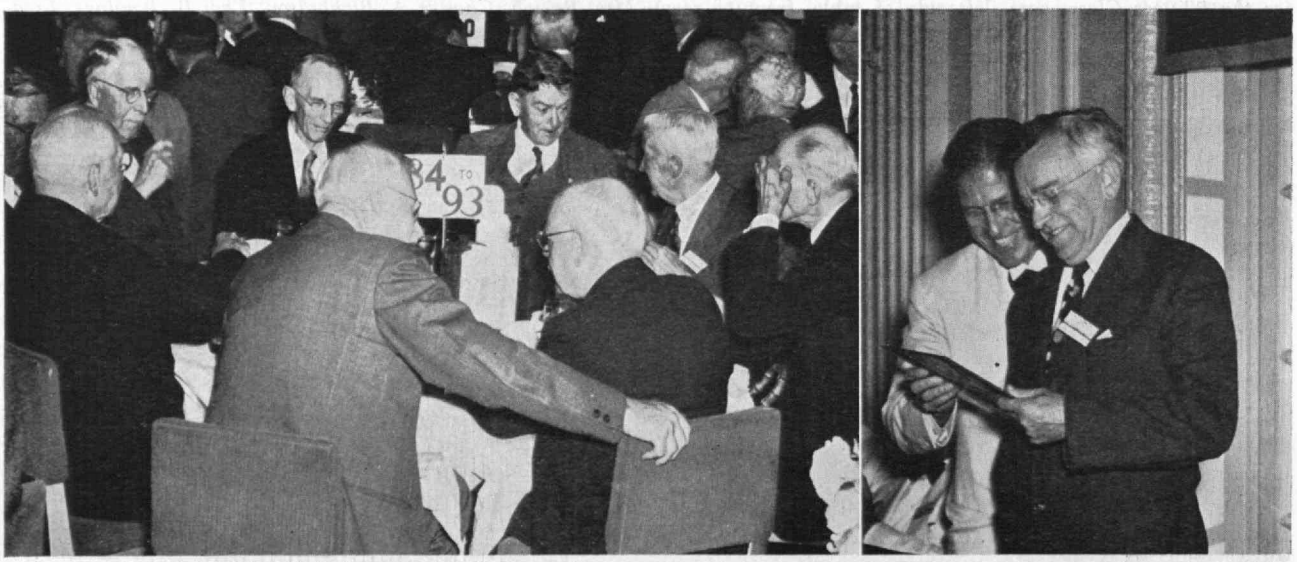
At this point, the meeting was opened for discussion by the 50 or 60 secretaries in attendance, and many local problems of student recruiting, student scholarships, and relations with heads of preparatory schools were discussed.

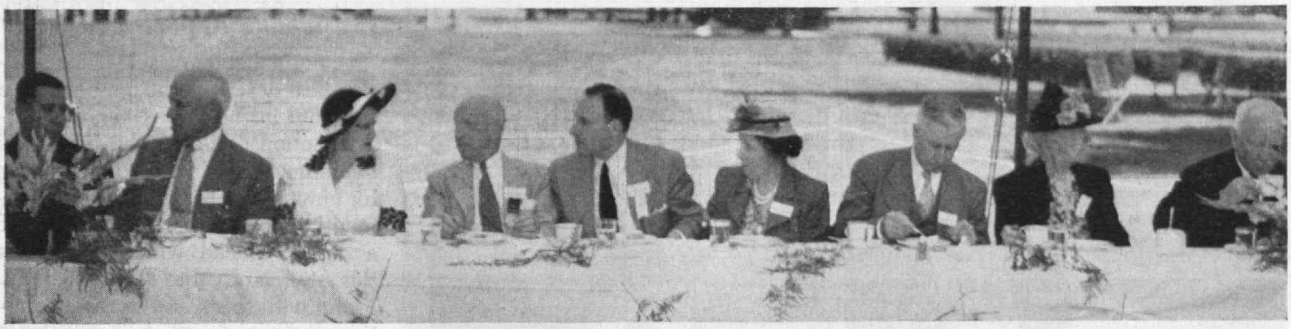
In concluding this portion of the meeting, H. E. Lobdell, '17, Executive Vice-president of the Alumni Association, spoke on student-alumni relations and emphasized the role which M.I.T. Alumni had played in funding M.I.T.'s independence for the 10-year period during which the Alumni Fund has been in operation.

After a most enjoyable dinner with congenial companions, President Killian spoke in review of developments currently taking place at the Institute. For the most part, the essence of President Killian's remarks is included in the news items and reports in various sections of this issue of The Review. He called upon Dr. Compton, who, since Alumni Day, 1949, has returned to the Institute full time as chairman of the Corporation. Mr. Dalton gave the representatives assembled a preview of the status of the Development Program which was publicly announced at the banquet on Alumni Day the following day, and which is reported below under the heading of Alumni Banquet.

In a report on one of the outstanding developments of the past year, Professor Ronald H. Robnett of the Department of Business and Engineering Administration, reviewed the work of the Committee on Educa-

Young in spirit were graduates of some six decades ago. In clockwise order, beginning with man having arm on next chair, are: Frank W. Howard, '91, John L. Damon, '91, Harry J. Carlson, '92, Professor Emeritus Charles E. Fuller, '92, Leonard B. Buchanan, '93, Fred E. Ellis, '88, Arthur T. Chase, '86, Samuel S. Dearborn, '84, and Harry H. Young, '91. At the right, Toastmaster Desmond beams approvingly as certificate of honorary membership in the Alumni Association is awarded to John W. M. Bunker, Dean of the Graduate School.





At the President's Luncheon for the 50-year Class, the head table included, in reading order: James R. Killian, Jr., '26, Karl T. Compton, Mrs. Killian, Stanley G. H. Fitch, '00, Donald P. Severance, '38, Mrs. Fitch, Herbert R. Stearns, '00, Mrs. Ingersoll Bowditch, and Charles E. Smith, '00.

tional Survey whose report, it is hoped, will soon be available for general distribution. In summarizing the studies which the Faculty committee of five has been conducting for two and a half years, Professor Robnett called attention to the Institute's need for student housing in the vicinity of the Institute's academic buildings – a need which is being rapidly met – and to the program of supplementing the students' technical training by subjects in the humanities to provide a more rounded education. The Institute is also giving increased attention to its undergraduate curriculum, and its Faculty has appointed a Committee on Undergraduate Policy with full responsibility for co-ordinating the work previously done by several groups dealing with specialized phases of the bachelor's program. Professor Walter G. Whitman, '17, Head of the Department of Chemical Engineering, reviewed the work now in progress by the new Committee on Undergraduate Policy of which he is chairman. This committee was established late in the spring by a vote of the Faculty (in conformity with the recommendation of the Committee on Educational Survey) to provide an integrated survey for all undergraduate studies, and has had half a dozen fruitful discussion meetings already.

After these reports from members of the Institute family, general discussion was participated in by Frank F. Bell, '10; William J. Sherry, '21; Lauren B. Hitchcock, '20; Harry P. Field, '21, and Walter T. Spalding, '10, representing the M.I.T. Club of Hawaii.

Alumni Day

On a bright day of perfect summer weather, approximately 1,000 Alumni returned to the Institute to take part in Alumni Day activities on the Institute campus and the Stein-on-the-Table Banquet at the Copley Plaza in Boston. Registration was held from 9:00 A.M. to 12:00 M. in the Rogers Building, and from 10:30 until noontime reunions and forums were held by the Departments of Aeronautical Engineering, Biology, Business and Engineering Administration, Chemical Engineering, Chemistry, Civil and Sanitary Engineering, Electrical Engineering, and Mechanical Engineering.

Between 12:30 and 2:00 P.M., a buffet-style luncheon was held in Du Pont Court at tables seating from four to eight persons. Under canvas, President Killian held luncheon for members of the Classes of 1890 and 1900, celebrating their 60th and 50th reunions, respectively. The class of 1910 also had special tables, in honor of their 40th reunion.

Symposium

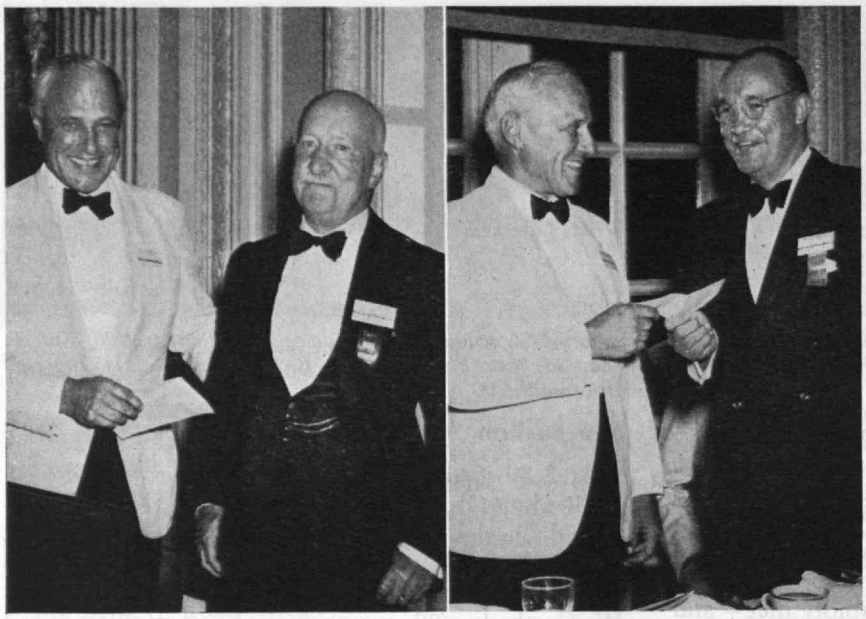
At 2:30 P.M., the symposium, "Access to Ideas – Is Reading Obsolete?" was held in the recently completed Charles Hayden Memorial Library. Vernon D. Tate, Director of Libraries, welcomed the guests to the Institute's latest educational building, and William W. Garth, Jr., '36, symposium chairman, introduced the symposium speakers: Colonel Elbridge W. Palmer, Andrew Heiskell, and Admiral Luis de Florez, '11. The thoughts expressed during the symposium are recorded as feature articles on pages 506, 510, and 512 of this issue of The Review.

Between 4:00 and 5:30 P.M., President and Mrs. Killian welcomed Alumni at the President's House, after which many classes held predinner gatherings at the Copley Plaza between 5:30 and 6:30.

In keeping with the theme of this symposium, "A Technology Book Shelf, 1868 to Date" was on display in the halls of the Hayden Library. Shown were about 200 volumes on a wide variety of topics – all of which were written, or in a few cases edited or illustrated, by M.I.T. graduates. The selection represented volumes from standard technical textbooks to works on electricity for boys, a perpetual calendar, travel, biography, stamp collecting, early American furniture, and even the manufacture of sausages.

Around the table in clockwise order are: Mrs. Fuller, Floid M. Fuller, '06, Edward B. Rowe, '06, standing and talking with Horace S. Ford, M.I.T. Treasurer, and James W. Kidder, '06, Class Secretary.





Karl T. Compton, chairman of the M.I.T. Corporation, receives Class gifts from Charles E. Smith, '00, (left) *and from Richard P. Price, '25,* (right) *during an important moment of the Alumni Day Banquet.*

Alumni Banquet

Inaugurating a change from the practice of many years past, the Alumni Banquet this year was held at the Copley Plaza. Approximately 800 were present in the main ballroom, whereas about 70 wives attended the Ladies' Banquet in the Sheraton Room at the same hotel. The Technology stein, which each dinner guest received, was designed by Henry B. Kane, '24, Director of the Alumni Fund. Harry U. Camp, '18, and Orville B. Denison, '11, were organist and song master, respectively, in some of the less serious moments of the evening's events. Mr. Sawyer was the presiding officer and Thomas C. Desmond, '09, was master of ceremonies. For the 25-year Class, Richard P. Price, '25, presented his class gift of $86,000 to Dr. Compton, and for the 50-year Class, Charles E. Smith, '00, made a presentation of a packet of checks and securities in excess of $25,000. Both of these handsome gifts were accepted graciously by Dr. Compton.

John W. M. Bunker, Dean of the Graduate School, and a member of the Institute's Faculty since 1921, was then conducted to the speakers' table by Donald P. Severance, '38, Secretary and Treasurer of the Association, to receive a certificate attesting to his recent election to honorary membership in the M.I.T. Alumni Association. Thus was a 1909 Alumnus of Brown University inducted into the lusty family of Technology graduates, many of whom he had taught, or had later guided through the Graduate School.

In reporting progress during the past year by the Committee on Financing Development, Mr. Dalton announced that in the last fiscal year the program had raised $8,500,000 – bringing the grand total in the $20,000,000 program to $13,650,000. When this announcement was made, three additional gifts of $1,000 each were announced by the Class of 1925.

The final major item on the program was the annual report to the Alumni by President Killian recorded below, slightly condensed.

President's Report

A normal state of self-dissatisfaction best describes the temper of the Institute in the year 1950. Self-dissatisfaction underlies the Institute's dynamic quality, its restless seeking for new solutions, the sense of movement, of goals to be attained, and of a destiny ahead which permeates the staff and the student body. Along with this sense of dissatisfaction and movement, however, goes a sense of stability and assurance. In commenting upon our New Dormitory, one of the architectural magazines observed that "only an institution as self-assured as M.I.T." would have parted so drastically from the conventional and the stereotyped.

Tonight I would like to give some illustrations of how these two forces, the force of change and the force of stability, shape our program. I want to start by talking about people, and I want to start talking about people by talking about Karl T. Compton, chairman of the Corporation. The event of the year was his happy triumph over illness and his return to the Institute full time. Better than perhaps anyone else, I can testify to the reassurance we all feel now that we again have the uninterrupted benefit of his vigor and leadership.

Scholarship

In talking about people I also want to talk about students. We have 5,000 of them, hailing from all over the nation and all over the world. I doubt if you could find a more cosmopolitan group of students anywhere in the world, or a more exciting and challenging group of young people with whom to work. That they are a versatile and winning group is shown by the records. Of the total of 96 Rhodes scholars selected throughout the country this spring, two were selected from M.I.T.'s student body. Twelve of our students this spring received Fulbright awards for study abroad, an exceptionally high percentage of the number who applied, we understand from the committee on selection. Among the 85 students from all over the world selected this year for Rotary International Fellowships, M.I.T. had its representative.

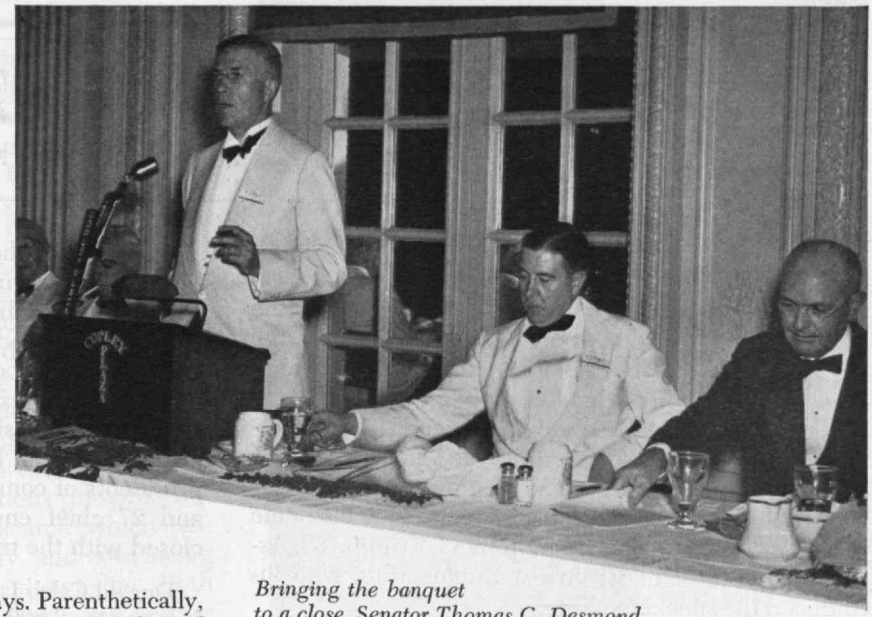
Recently I received a report from the Association of American Medical Colleges giving the standing of our graduates in the qualification examinations given on a national basis for admission to American medical schools. The standings of students from 365 colleges and universities were reported upon, these being the institutions that had 15 or more graduates to take the national examinations. Some 22 men who had had their premedical training at M.I.T. took the examinations. M.I.T. stood in the first two institutions in the competitive standing of its students in premedical training; it stood in the first three in the standing of its students in general educational preparation. These first two standings were not altogether surprising, but the third one was. In understanding modern society, our students stood within the first three institutions of the country.

This fine competitive showing reflects the high quality of work done in our Biology Department, where premedical students get their training, and on the effectiveness of the Institute's undergraduate professional program as a

program in general education. This is a very reassuring result, because the Institute is giving increased attention, as I shall explain later, to broadening the base of its educational program and to making sure that we give our undergraduates a well rounded education.

Athletics

If our students do well in scholastic competition, they are showing themselves to be no slouches in athletic competition. You may have heard that this spring we won a crew race. In fact, we won the Eastern Sprint Championship against the largest number of crews ever to compete in this event. We won it with a crew that averaged in height six feet four and three quarters inches, evidence enough that we grow them tall these days. Parenthetically, you will be interested to know that only one member of this varsity crew was a senior, so that we have a pretty good reason to believe that we will have a good crew next year. Crew is not the only sport in which our students did well during the year. In the Millrose games in New York our mile relay team defeated Princeton, Harvard, and Yale; our sailors several weeks ago won the Eastern Dinghy Crown; and our rifle team, the New England Championship.



Bringing the banquet to a close, Senator Thomas C. Desmond, '09, toastmaster, expresses thanks to all who, in the words of the popular Technology song, made Alumni Day, 1950, "a mem'ry that will never die." President Killian and Marshall B. Dalton, '15, are at the right.

Students and Faculty

How will M.I.T.'s graduates fare this year? I am happy to report that already two thirds of our graduates are either placed or are going on for graduate study. We expect by fall that most of them will be placed. This is a remarkable record considering the over-all national situation.

Except for the temporary imbalance caused by the swollen G.I. classes, the long-term outlook is favorable. The engineering profession is now the largest profession for men in the United States, being exceeded only by the teaching and nursing professions. A recent study by the Bureau of Labor Statistics indicates that a further steady growth in this profession may be expected over the next decade.

While statistics are no way to measure scholarly achievement, it is interesting to observe that some 900 books and scientific papers were published by members of our Faculty and Administration during the academic year reported on in the last President's Report.

During the year Professor Bruno B. Rossi of the Physics Department and Julius A. Stratton, '23, our Provost were elected to membership in the National Academy of Sciences, bringing to a total of 14 the number of our Faculty and Administration who have received this, the most distinguished honor available to American scientists. Many other honors, awards, recognitions, and fellowships came to members of the staff this year – more than enough to certify the high level of accomplishment and prestige of our Faculty, one of the outstanding company of great scholars and great teachers in the world, the foundation of M.I.T.'s greatness.

Educational Survey

Aside from its high output in scholarship research, and teaching, the Faculty also has been giving an abnormal amount of attention to this normal state of self-dissatisfaction of which I spoke. The most important academic event of the year at the Institute was the presentation of the report of the Faculty Committee on Educational Survey, which has come to be affectionately known as the Lewis Committee because Professor Emeritus Warren K. Lewis, '05, of the Department of Chemical Engineering was its chairman. This report, which will shortly be given public distribution, is a milestone in the development of the Institute's educational philosophy, and a distinguished contribution to educational thought which, I am sure, will have a profound effect on engineering education in the United States.

Most notably the report drives home the opportunity which M.I.T. has to still further strengthen its undergraduate education in order that the Institute may turn out men better qualified to deal with the current problems of society. The committee recommended ways, subsequently adopted by the Faculty, in which the organization of our Faculty could be strengthened for the purpose of achieving better educational supervision and integration of our undergraduate curriculum. The committee urged that we move in the direction of more flexibility, that we improve our subjects of instruction by reduction of detailed content and by increased emphasis upon fundamental principles, and upon the development of powers of judgment and discrimination by the students in the formulation and application of these principles. It suggested a variety of ways in which we can further improve our teaching techniques, and it outlined many ways in which we can provide an environment contributing to the intellectual unity and the morale of our Faculty. And finally, the report recommended that we give increasing importance to the humanities and the social sciences in our program. "It is M.I.T.'s duty," says the report, "to prepare its students for social responsibility and for a rich and complete life. But, important though these objectives may be, technological and social problems are now so inextricably woven that the humanities and social sciences are also essential components of a man's professional education. Without an adequate cultural background, a technical specialist is no longer qualified for leadership in his own field."

I am particularly happy about the emphasis which the committee placed upon a strong and advancing undergraduate program. We have not made as much progress

(*Continued on page 526*)

THE INSTITUTE GAZETTE

PREPARED IN COLLABORATION WITH THE TECHNOLOGY NEWS SERVICE

Dugald Caleb Jackson Room

On Sunday afternoon, June 11, as part of the events of commencement and Alumni Day, the Dugald Caleb Jackson Room was dedicated at a tea and ceremony attended by more than 50 members of Professor Jackson's family, friends, former students, and staff associates of the Department of Electrical Engineering. The program, which was transmitted by wire to Professor Jackson at his home in Cambridge, was opened by John G. Trump, '33, Associate Professor of Electrical Engineering, who introduced the speakers.

On behalf of M.I.T., Edward L. Moreland, '07, who retired in June as Executive Vice-president of the Institute, presented the attractive Dugald Caleb Jackson Room. He stressed the importance of Professor Jackson's contribution to engineering and engineering education, pointing out that from his graduation in 1885 to now, he had witnessed and been a part of almost the entire growth of the electrical industry as we know it today.

Professor Harold L. Hazen, '24, accepted the Dugald Caleb Jackson Room on behalf of the Department. Speaking of his former chief, Professor Hazen said:

> He valued as of first importance a faculty deeply devoted to the training of young people in the creative spirit of engineering, and a faculty who are known and respected nationally and internationally for their professional accomplishments. . . . On behalf of my colleagues and I who have had the rich experience of working with Professor Jackson, who have profited immeasurably by his wise counsel and patient guidance, and who have long since developed a deep and abiding affection for him and his lifelong helpmate and partner – need I name her? – I wish to pay a grateful tribute to him to whom we dedicate this room.

A poem by Catharine Jackson Alger, daughter of Professor and Mrs. Jackson, entitled, *We Inherit from the Universe,* was read by Mrs. David Prince, granddaughter.

Joseph W. Barker, '16, a close friend of Professor Jackson for many years, gave the dedication address which he opened by recalling a few of the many pleasant personal relations he had had with Professor Jackson as teacher, colleague, and friend since 1912. In opening his comments, Dr. Barker said:

> It is peculiarly appropriate that this Seminar Room of the Department should be dedicated to Professor Jackson. He was the moving spirit and instigating force behind the many educational features of the Department which will use this room – graduate seminars, honors groups, colloquia to mention only a few. I hope also that it will become the custom to hold the departmental staff meetings here so that future generations of staff may draw inspiration and guidance by figuratively "sitting at his feet."

Speaking of the leadership that Professor Jackson had exerted during his 27 years as Head of the Department, Dr. Barker pointed out that Professor Jackson's former students now included: four deans of engineering schools; 29 executive officers of departments; 82 professors of electrical engineering; two past presidents, six vice-presidents, and two directors of the American Institute of Electrical Engineers; 21 presidents of companies, 16 company vice-presidents, and 27 chief engineers. Professor Barker's address closed with the tribute:

> Dugald Caleb Jackson, by virtue of the authority vested in me by the 2,800 graduates of your Department I confirm to you the loving admiration of all your students in whose hearts you will live as the embodiment of the professional and personal ideal and confer upon you all the rights and privileges thereunto appertaining.

Although Professor Jackson was not able to attend these ceremonies in person, he was represented by members of his family, including, Mrs. Jackson, Philip L. Alger, '15, and Mrs. Alger, Mr. and Mrs. David C. Prince, Jr., Dugald C. Jackson, Jr., '21, and Dugald C. Jackson, 3d, '40. Among the distinguished guests who were present was William F. Ryan, Vice-president of Stone and Webster, Inc., with members of his family. Mr. Ryan has been closely associated with Professor Jackson throughout the years, and has been an active partner in formulating "The Faith of the Engineer" with Professor Jackson for the Engineers' Council for Professional Development. Approximately 25 senior members of the staff of the Department of Electrical Engineering and their wives also attended the ceremonies.

The Dugald Caleb Jackson Room is decorated in modern motif, adjoins the headquarters of the Electrical Engineering Department on the Great Court, and will be used for seminars, conferences, and special meetings of the Department. Acknowledgment was made to the firm of Jackson and Moreland, and to the Institute for this room.

Distinguished Visitor

His Excellency Liaquat Ali Khan, Prime Minister of Pakistan, and his Begum, Liaquat Ali, were guests of the Institute on May 26. The Prime Minister was accompanied by His Excellency M. A. H. Ispahani, Pakistan Ambassador to Washington, the Honorable M. Ikramullah, Foreign Secretary of Pakistan, and other representatives of Pakistan, as well as by officials of the State Department.

The Prime Minister and a number of his party were the guests of James R. Killian, Jr., '26, President of M.I.T., and Mrs. Killian at the President's House. They visited various laboratories at the Institute, and the Prime Minister addressed students and Faculty on "Pakistan, a New Country in the Modern World."

Goodwin Teaching Awards

THE awards honoring the memory of Harry M. Goodwin, '90, whose distinguished association with M.I.T. culminated with his service as dean of its Graduate School, have been announced by John W. M. Bunker, the present Dean of the Graduate School. Established by gift of Dr. Goodwin's widow, Mary B. Goodwin of Brookline, and their son Professor Richard H. Goodwin of Connecticut College, the awards have been established to encourage graduate student achievement in contributions to teaching.

The Goodwin Medal will be awarded in recognition of conspicuously effective teaching of a junior staff member who is also a graduate student. It will be accompanied by a cash prize up to $1,000. The Goodwin Premium consists of a citation and cash prize up to $500 to a graduate student whose thesis presents conspicuously meritorious original research which embodies striking originality, ingenuity, and convincing presentation of a contribution to knowledge. Both awards will not be made in any one year and neither will be conferred if outstanding performance has not been conspicuously effective over and above ordinary excellence. The award is in keeping with the Administration's desire to improve quality of teaching, as evidenced by the lectures on pedagogy begun last fall.

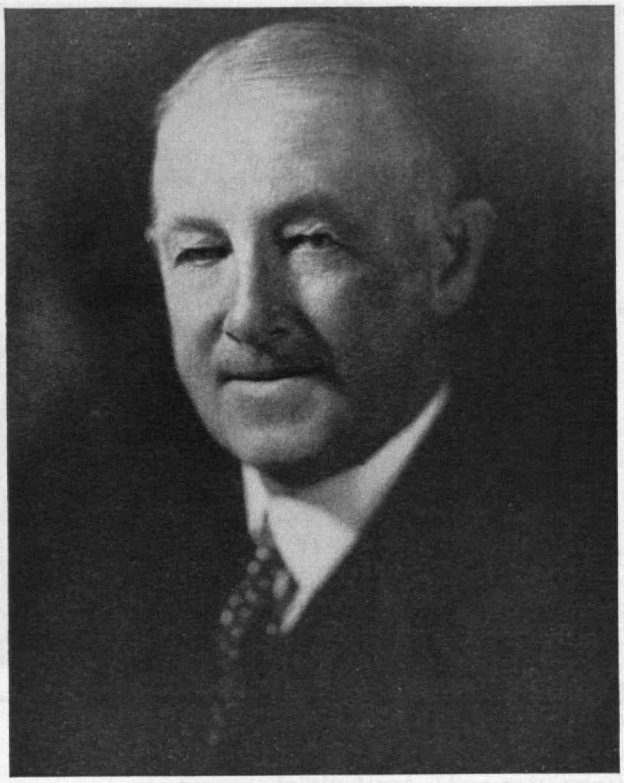
The bases for the awards are unusual in that they do not comprise a competition in which even winning performance might be merely creditable. The Goodwin medalists will constitute a select group of unusually able young teachers. The recipients of the Goodwin Premium will be an equally exceptional small number of those who have contributed importantly to the subject matter for teaching in a degree over and above ordinary expectancy.

Edwin S. Webster: 1867–1950

THE date May 10, 1950, marks the death of Edwin S. Webster, '88, in the annals of the Institute. A member of the Executive Committee of the Corporation and a founder (with his classmate, the late Charles A. Stone) of the engineering firm of Stone and Webster, Inc., he had spent 65 of his 82 years in close association with the Institute and in the field of electrical engineering.

Mr. Webster, the son of Frank G. and Mary M. Webster, was born in Boston on August 26, 1867. A graduate of the Course in Electrical Engineering, he received the degree of B.S. from the Institute in 1888, and was the recipient of an LL.D. from Northeastern University in 1936.

Only one year had elapsed after his graduation from M.I.T. when he and Mr. Stone organized Stone and Webster – the first firm in the country to operate exclusively as engineering consultants. Although in the beginning their activities were mostly in the field of electrical engineering, particularly concerned with public utilities, in later years the partners expanded their services to include general design, engineering, and construction. Stone and Webster furnished supervisory services to public utilities, as well as to industrial companies. The firm also established an investment banking business.



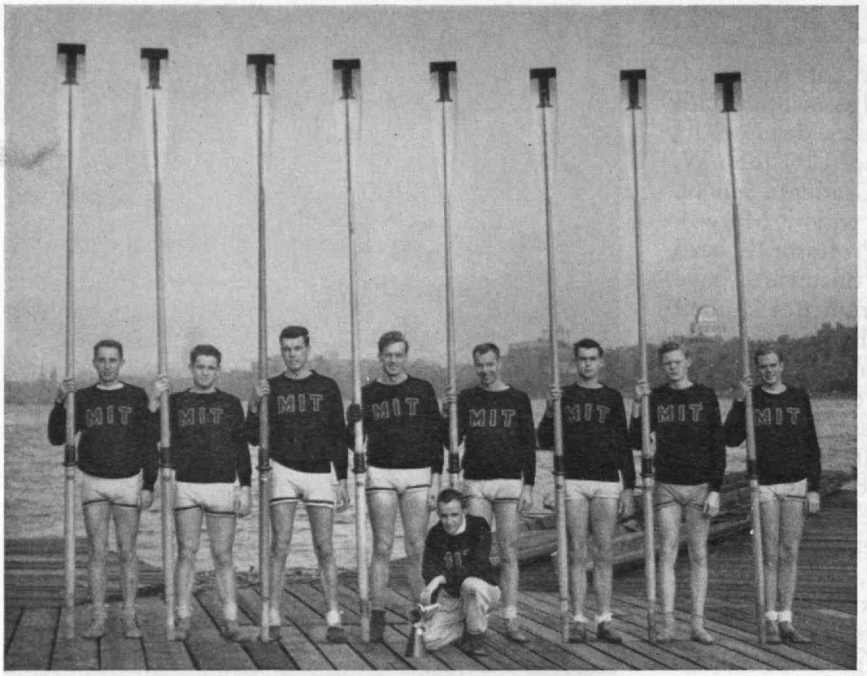
Edwin S. Webster, '88

Member of the M.I.T. Executive Committee

In 1909, Mr. Webster served as president of the M.I.T. Alumni Association. He became a term member of the Corporation of the Institute in 1910, and five years later was elected to life membership on the Corporation. In addition to personal services donated to the Institute through membership on various committees, in 1935 he was one of a group of industrial executives (Research Associates of M.I.T.) who contributed financial support to important research.

To Stone and Webster were entrusted the design and construction of the New Technology in Cambridge, when M.I.T. was moved from its Boston site to the Charles River location, and the particular personal contribution of these two partners was the President's House – a unit which might well be considered the visible evidence of the beginnings of the humanities at this engineering and scientific school because such a structure presented opportunity for students and academic colleagues to see the human side of their leader in a home environment.

Mr. Webster was president of Stone and Webster, Inc. for many years. He became vice-chairman of the firm in 1930 and when Mr. Stone died in 1941 served as chairman of the board. Upon his retirement in 1946, Mr. Webster continued as director in many subsidiary companies. Among his professional societies are included the American Institute of Electrical Engineers and the Boston Society of Civil Engineers; among his social clubs, the Union, St. Botolph, and Engineers. Mr. Webster was a trustee of the Boston Museum of Fine Arts, and for 13 years was president of the Massachusetts Horticultural Society. From 1938 until his death, he was president of the M.I.T. Class of 1888. Mr. Webster is survived by his wife, the former Jane de Peyster Hovey, and three children.



May 13 was a memorable day in M.I.T. crew history for it brought a very frustrated Beaver crew a definite upset win over favored Harvard. The Beavers had twice failed to nip the vaunted Harvard boat in previous races on the Charles, and in both instances the margin of defeat was a matter of inches. Proving to be good travelers, and vowing not to be denied the third attempt, the Engineers stroked to a win over the East's top crews at the Annapolis Eastern Rowing Championships. M.I.T. won over Harvard in another photofinish, but close as it was, the Technology crew now reigns supreme as Eastern Rowing champions.

Those in the varsity boat were (left to right): *Allen B. Fonda, '51, Forest C. Monkman, '51, Robert C. Weber, '50, Richard D. Semple, '52, Paul G. Smith, '51, John C. Casson, '52, Donald A. Christensen, '52, Alexander W. Urling, Jr., '52, and Donald E. McGuire, '50, coxswain, kneeling in front.*

M.I.T. Photo

THE PROMISE OF TECHNOLOGY

(*Continued from page 513*)

go ahead. Research of this fundamental character, which will result in the selection of common goals, must be undertaken on some sort of co-operative basis, since the printing industry is composed for the most part of a great number of small concerns, no one of which is likely to be financially able to support such a sweeping long-range investigation. Therefore, it is incumbent on the industry as a whole, possibly through the various trade associations, to make joint sponsorships possible.

Joint sponsorships should also encompass fundamental study of the raw materials used by the industry, such as paper and inks, and even adhesives, since basic improvement of such materials can lead to radical changes in production methods and costs. Although the responsibility for the development of these materials lies theoretically outside the industry, their influence on the industry is so great that closely integrated research is essential in striving for better printing techniques.

It is just as important for an industry to invest in research to plan and safeguard its future as it is for its manufacturers to set up depreciation accounts for their machinery. Concepts and methods have a way of becoming just as obsolete as machinery, with the inexorable march of time, and must be changed or replaced to keep pace with a constantly changing world. With the guidance provided by long-range research and an increasing knowledge of the nature and possibilities of materials, the technical skill and experience which we already have will allow us to proceed safely with the application of technology to develop new techniques required, and their adaptation to current manufacture.

The production of printed matter in quantity, in whatever form it may be produced — even including its shipment and distribution to the public — is essentially a process. To achieve efficient operation, we must view the process as a whole, constantly keeping in mind the ultimate purpose of the operation if we would simplify procedure and avoid difficult mechanical problems. We should reserve the option of regrouping, modifying, changing, and eliminating steps.

The improvement in individual machines is essential as one of the steps on the road to progress, but we must not let our interest and enthusiasm for specific mechanisms be construed, necessarily, as the equivalent to improving the process itself. It is essential to evaluate the performance of a machine in terms of its effect on the process as a whole, and not solely with relation to improvement of some individual step.

The importance of this point of view was evident repeatedly in the development of a new and certainly unconventional process to make a conventional hard case book which I, and my associates, completed a year ago. We had for an objective the construction of what might be called an essembly line to manufacture 80,000 books per day, and to strive for a reduction in labor of 50 per cent over conventional operation. That we achieved this goal, and more, bears witness to the effectiveness of the engineering approach, for none of us had ever had previous experience with book manufacture.

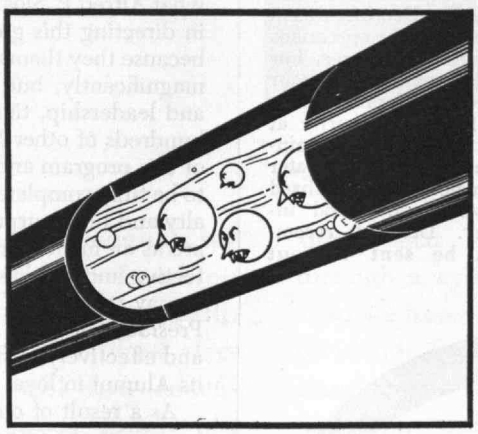
We realized early in the planning that, if radical simplification ever was going to be possible, we had to eliminate the traditional method of binding pages by sewing together the printed matter folded into signatures. No improvement in sewing machines, which have already been perfected to a high degree, or conveying machinery, could ever reduce labor to the extent which would make the project attractive. The Gordian knot was cut by the substitution of a binding method whereby the individual pages are joined together with a plastic film applied and cured in a continuous binding machine. This change in process permitted the regrouping of steps and elimination of enough hand operation to achieve the objective and

(*Continued on page 544*)

BUSINESS IN MOTION

To our Colleagues in American Business . . .

● Quite a number of years ago Revere coined the phrase "Bubbles have teeth." This refers to the fact that what is called air entrainment is highly damaging to condenser tubes. Bubbles carried along with the cooling water set up a strong disturbance in it, disrupting the film that should protect the metal, and actually seeming to eat away the tube. The oxygen contained in the air bubbles also is destructive. Fortunately, the effects of air entrainment on condenser tubes are sufficiently distinctive to permit Revere Research to detect the trouble by examination of short lengths cut from tubes that have failed before their time.



Thus it happens that every once in a while the Research Department in Rome, New York, working through the Technical Advisory Service, is able to say that there is air leaking into a condenser it has never seen, in a far-off state. The problem then is to seal the water system against the entrance of air. This is not always an easy task, and it is one that the Revere Technical Advisory Service is glad to tackle together with the customer if asked to do so. After all, we want our condenser tubes to last as long as possible; that's what makes customers happy, and builds and preserves our reputation as producers of fine tubes.

In one such instance of bubble trouble, the operator, a public utility, could find no visible sign of a leak. Checking and tightening every bolt and seal produced no results. Finally it was decided to put plate glass windows in some of the inspection plates, in order to see what was going on inside. This located the defect, a stream of bubbles being easily seen pouring out of a gasket. The water was flowing past that gasket with sufficient velocity to suck air in, and was moving too fast to leak out.

In another instance, a few samples of failed tubes from an oil refinery (located almost 3,000 miles away from the utility) were sent to Revere's Research Department. The refiner was told that his trouble was due to bubbles. Again, a check of the condenser showed nothing. The water inlet and outlet lines and all gaskets and bolts seemed to be perfectly tight. Here was another puzzler. But once again it seemed plausible to assume that air was being drawn in where water velocity was high enough to create a suction. The search finally went all the way back to the water pumping station, where two cracked castings were located. Air sucked in through two tiny cracks was enough to do a lot of damage; bubbles do indeed have teeth.

You can see that Revere wants its customers to be satisfied, and to that end sometimes goes to great lengths to look into conditions for which it may be in no way responsible. This attitude is typical of American business; every company rightly regards the satisfied customer as a precious asset, the source of orders that support the business and its employees. Therefore it is suggested that if any product you buy for use in your business is not completely satisfactory, let the supplier know, even if you are sure the trouble is not his fault. He will be glad to cooperate with you in a search for satisfaction.

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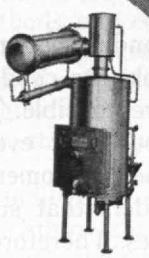
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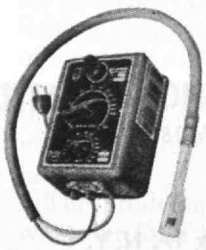
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ALUMNI DAY, 1950

(*Continued from page 521*)

in recent years in this country in undergraduate teaching as we have in graduate teaching, and the time has come to give special attention again to this part of our program. At M.I.T., where pioneering contributions have been made to undergraduate education, we have a tradition and a responsibility to live up to. The Faculty and Administration are in accord that we must have superlatively good undergraduate teaching, the best that can be found. . . .

In well-chosen remarks, President Killian then paid warm tribute to the long and faithful service rendered by Edward L. Moreland, '07, Executive Vice-president, and Horace S. Ford, Treasurer, both of whom retire from regularly assigned M.I.T. activities at the end of the school year, and continued with a discussion of the Development Program.

Development Program

And now I want to discuss various aspects of the M.I.T. Development Program which Marshall B. Dalton, '15, chairman of the Committee on Financing Development, did not touch upon in his report to you. The first is to pay tribute with all the affection and admiration that I can muster to Marshall Dalton, himself. I speak with unreserved enthusiasm and appreciation for what he has done and for what Alfred P. Sloan, Jr., '95, honorary chairman, has done in directing this great program for the Institute, not only because they themselves have contributed unsparingly and magnificently, but because they typify the contributions and leadership, time, imagination, and hard work, which hundreds of other M.I.T. Alumni have given. The success of this program and the assurance we have that it is going to be fully completed, is testimony to the extraordinary loyalty and high purpose of M.I.T. Alumni. How favored we are as an institution that we can command this kind of effective and public-spirited support! And here I wish also to pay tribute to C. Adrian Sawyer, Jr., '02, the retiring President of your Alumni Association. He has staunchly and effectively worked to strengthen M.I.T., to marshal all its Alumni in loyal brotherhood. . . .

As a result of our Development Program we now have in process of construction and in the planning stage nearly $4,000,000 of new construction, all a part of our Development Plan. The Hydrodynamics Laboratory and Towing Tank is now practically complete. The 12-million volt electrostatic generator will be completed this fall. Plans are now out for bids on the Alfred P. Sloan Metals Processing Laboratory, and designs are being drawn for the John Thompson Dorrance Laboratories of Biology and Food Technology.

One of the most important additions to our facilities during the year, again made possible through the Development Program, was the purchase of the Riverside Apartment Hotel on Memorial Drive. We will start this summer converting this building to a dormitory that will ultimately house 600 students. This, together with our New Dormitory which was finished last year, gives us within a year nearly 1,000 new accommodations for students and brings us closer to our objective of having M.I.T. a residential college. When the Riverside Apartments are in full use as a dormitory, we will be housing approximately two thirds of our student body, including the temporary barracks, Westgate, Westgate West, and the fraternity houses. . . .

And so with your help and the help of the Institute's many friends, we are moving steadily ahead toward clearly established goals. I believe that in the years ahead we may

(*Concluded on page 528*)

Cold Enough to Freeze . . . the Resistance Out of Metals



When temperatures drop low enough . . . say 450 degrees below zero . . . bouncing molecules come to a virtual standstill, eliminating resistance to the flow of electricity so that current will flow indefinitely—even after the power supply has been cut off.

The illustration shows this phenomenon being demonstrated. A circuit has been submerged in liquid helium at a temperature of 452 degrees below zero. The demonstrator . . . Dr. Aaron Wexler . . . has "pulled the plug", disconnecting the circuit. The needle on the upper scale reads zero—no current is entering the circuit.

Yet, the indicator on the recorder below shows that 7,000 amperes are flowing through a cylinder of niobium.

So we have a phenomenon . . . one of the dividends from pure research that is constantly under way with Westinghouse. This particular result of research may lead, for example, to new and better methods of electric power transmission, to mention only one possible application.

Such research into the behavior of matter, particularly metals, at super-cold temperatures, is typical throughout the history of Westinghouse . . . it demonstrates one reason for the dynamic force of American industry . . . it suggests why Westinghouse can live with such a strong statement as . . .

G-10102

YOU CAN BE SURE . . IF IT'S Westinghouse

ALUMNI DAY, 1950

(*Concluded from page 526*)

expect from science and engineering a swelling stream of new concepts, new ideas, new products, and new processes which will improve our health, prolong our life, raise our standard of living, and open new vistas to man's spirit. A new age is within our reach if we can but continue this kind of productivity for which the Institute stands, but I believe, too, that we will do this only if we associate with the advances in science a comparable advance in the techniques of using scientific results humanely. M.I.T. as a great center of science and engineering must not neglect this latter aspect while it forges ahead in the development of science. We must be sure that we are not only producing ideas and things, but that we are also educating men, the most effective and well-rounded and responsible men that we know how to train. I have cited evidence of the success that we are meeting in training men who are prepared to accept the full obligations of citizenship. I want to assure you further that we propose to continue to do this, that we believe that the most effective scientists and engineers are not only masters of their fields, but also socially responsible men with a sense of the first-rate in every aspect of their lives. This is the kind of men we seek to train at M.I.T.

All photographs in the Alumni Day article are by the M.I.T. Photographic Service, with the exception of that of Mr. Heiskell at top of page 514 and the general view of Du Pont Court at bottom of page 515, which represent the work of Robert Astra, '52.

SKILL, KNOWLEDGE, JUDGMENT

(*Continued from page 502*)

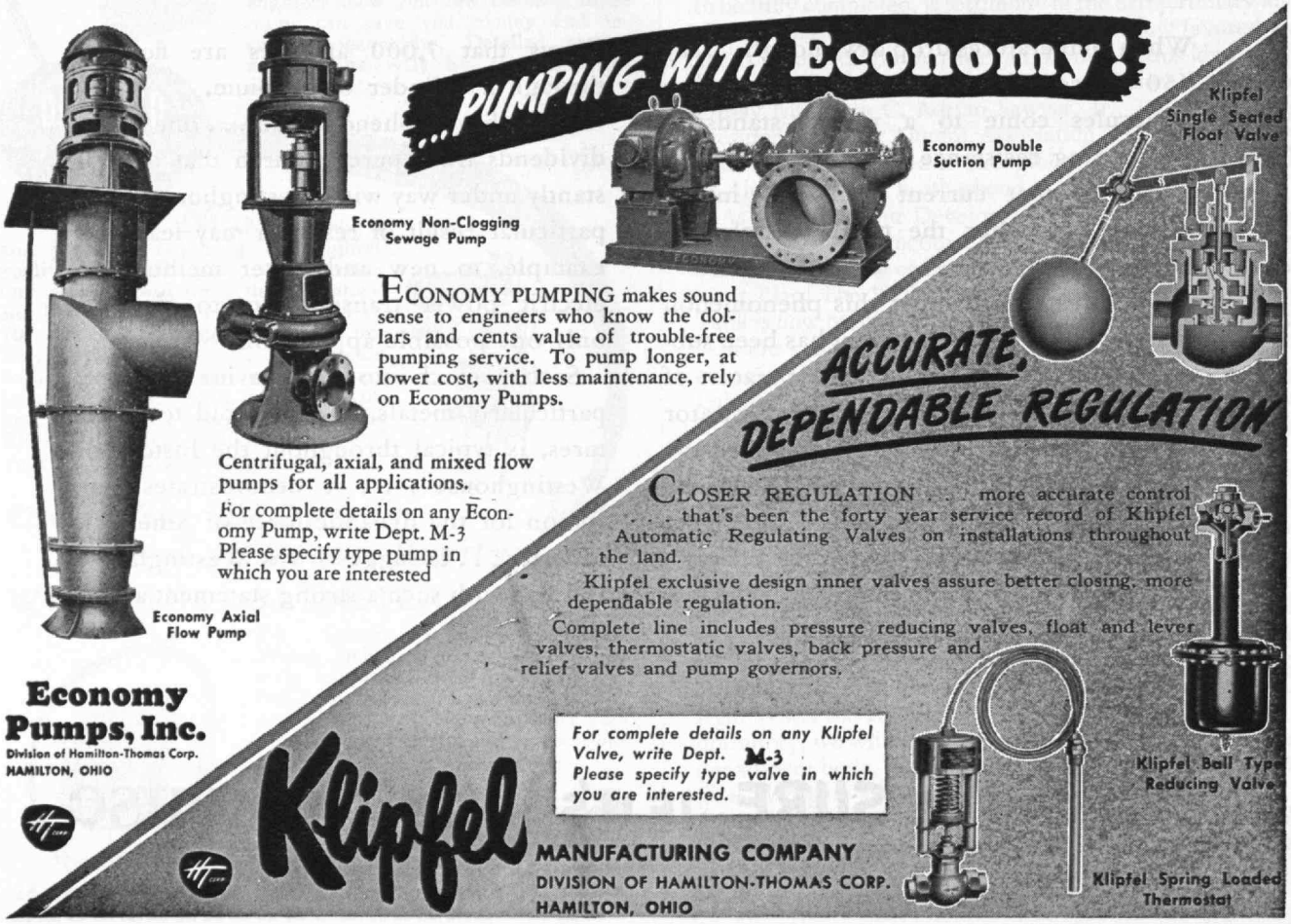
work aimed at acquiring it is one of the most significant aspects of a total education.

If we were to liken human competence to a single structure composed of a number of elements, I think that the pyramid would be a helpful representation. At the base there would be the ordinary and the specialized bodily skills, and then would come the particularized, personal knowledge essential to responsible behavior. Still higher we could place the professional knowledge and intellectual techniques acquired in school. But intellectual equipment is by no means the apex of the pyramid. That supreme position, I believe, must be reserved for judgment.

Judgment

Just what is meant by the word "judgment"? The faculty of judgment is vague, hard to pin down and analyze. There are no criteria for determining in advance what is good or bad judgment, so that acquiring good judgment is not a matter of hard and fast rational procedure. Perhaps we can say that judgment is concerned with decisions or solutions of problems when there is not sufficient factual evidence to warrant a conclusion or where the facts are subject to more than one interpretation. Judgment in that sense

(*Continued on page 530*)



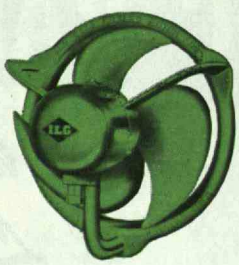
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SKILL, KNOWLEDGE, JUDGMENT

(*Continued from page 528*)

can then be considered as making the most of whatever facts are available.

To go strictly by the evidence is the only respectable course in answering scientific questions. Where adequate evidence is not available, the best judgment may be not to answer at all. But this may not be possible. There may be no choice about it. In scientific laboratories, no less than throughout most of our personal affairs, in the practice of the professions, in business management, and in public administration, question after question must be answered regardless of the state of the evidence on the subject. Sometimes it is debatable where the evidence points, sometimes there is not any evidence at all, and sometimes we do not even know what would actually constitute sufficient and valid evidence. And yet a decision is required. Because, *not* to answer might in itself provide an undesired answer by registering as a pocket veto. Furthermore, not answering does not successfully evade insistent questions. Here, then, is where we must call in judgment to assess the facts, or lack of them, in the light of all our other skills, knowledge, and past experience.

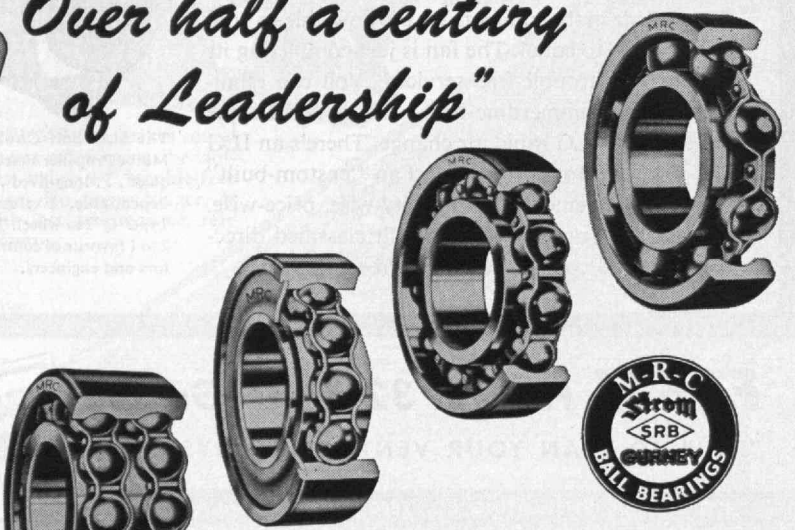
We often find ourselves hobbled by the uncertainties of ignorance, working against the unknown, and even the unknowable. When and whom to marry, how and where to educate our children, what to do when

(*Continued on page 532*)

M-R-C BALL BEARINGS



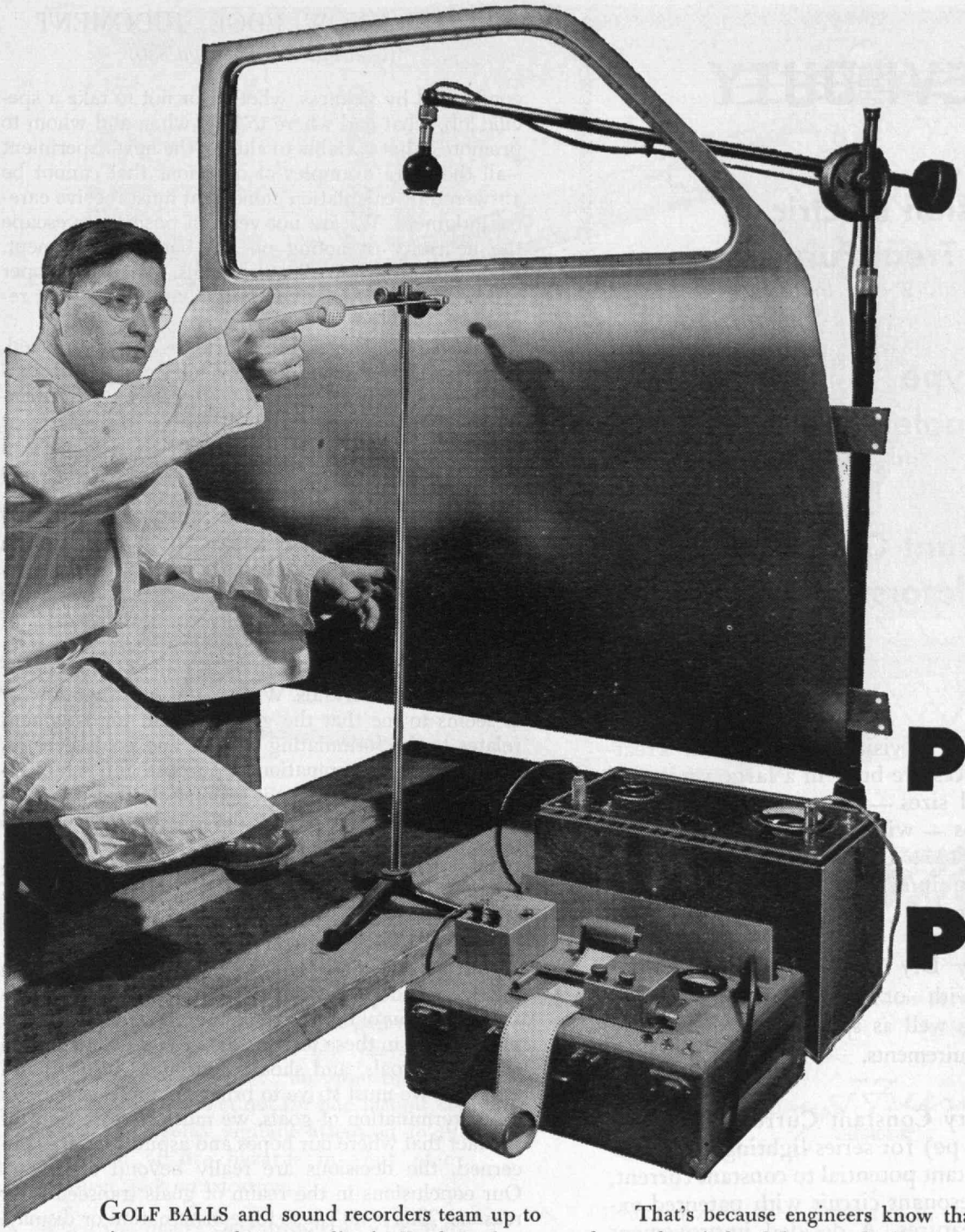
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Daniel Gurney, M.I.T.'25
Vice-President and Director of Engineering

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SKILL, KNOWLEDGE, JUDGMENT

(Continued from page 530)

confronted by sickness, whether or not to take a specific job, what and where to buy, when and whom to promote, what variable to alter in the next experiment —all these are examples of questions that cannot be answered by calculation alone, that must receive careful judgment. We are not yet in a position to escape the necessity of acting on the basis of judgment. Knowledge and intellectual skills, used in proper prospective, may facilitate judgment; they cannot replace it.

The hard facts of life must be squarely faced. Where we know what we want but have no substantial body of fact to guide us in obtaining it, an informed guess is often to be preferred to no guess at all. In dealing with established goals, experience and wisdom often carry the day, especially when time presses and some action must be taken. The willingness and the ability to exercise judgment in time of need, like the awareness of immediate situations, is inseparable from the concept of responsibility. Anyone can bet on a sure thing. But few are both capable of expert judgment and ready to run the risks of decision.

So much for the necessity of judgment in matters of means to establish ends. What of the ends themselves? It seems to me that the greatest need for judgment relates to the formulating of aims and goals because they involve determination of purpose and establishment of values. And here it is precisely that our skills and our knowledge are hardest to put to use. Cold reason connot predominate here.

What shall I do with my life; what is the good life for me; what is the good life for all men? These are questions which underlie all our other ineluctable questions. The answers are, and it is right that they should be, judgments coming from the heart or from the deepest depths of our experience, though the elusive consensus of the values of our fellowmen of course plays a part in these judgments. We may argue much about our goals, and should continue to do so, and although we must strive to bring reason to bear upon the determination of goals, we must not lose sight of the fact that where our hopes and aspirations are concerned, the decisions are really beyond argument. Our conclusions in the realm of goals transcend our reasons. This is no cause for consternation or dismay. It should be a source of faith and enthusiasm. Our

(Concluded on page 534)

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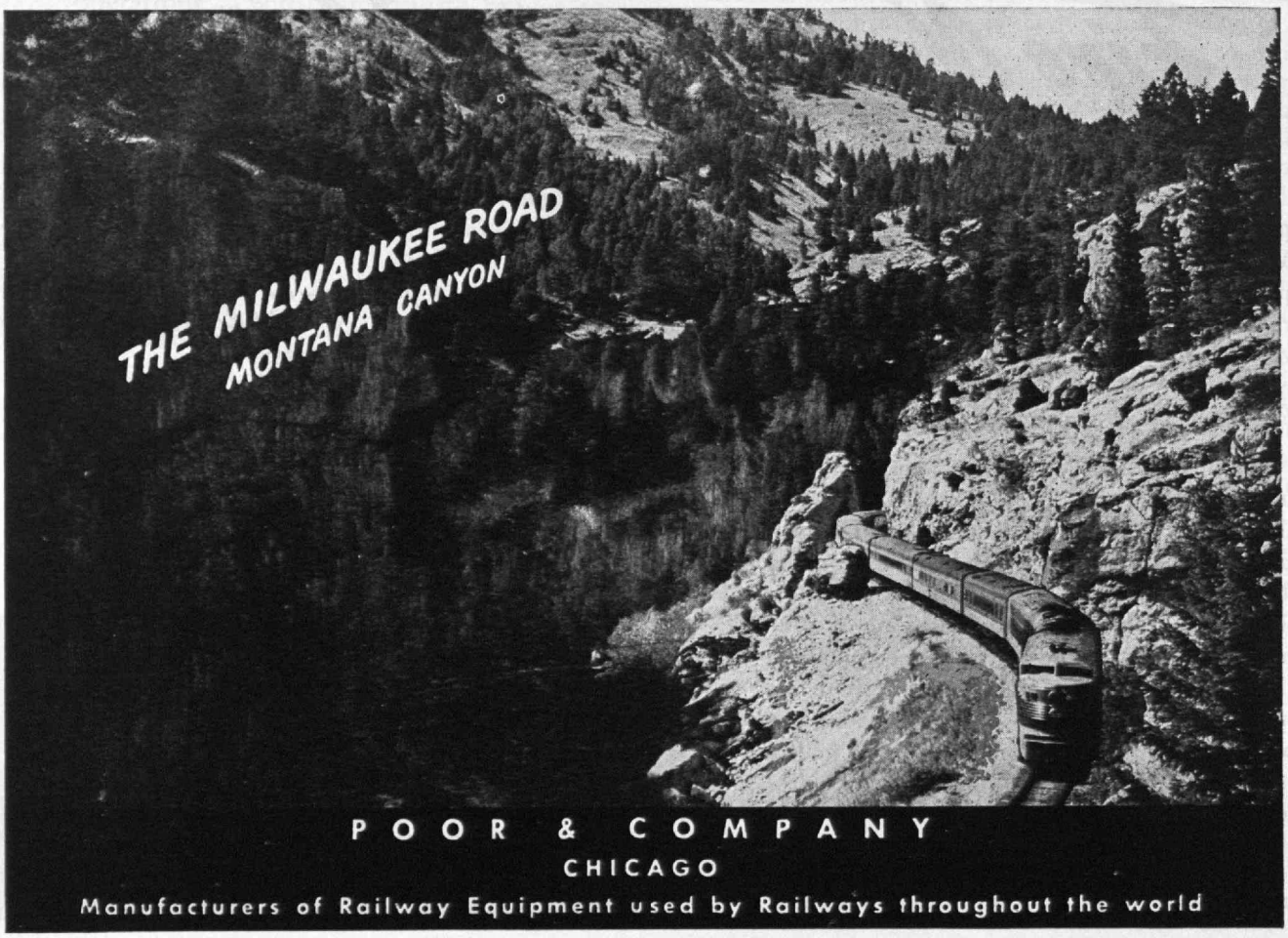
SKILL, KNOWLEDGE, JUDGMENT

(*Concluded from page 532*)

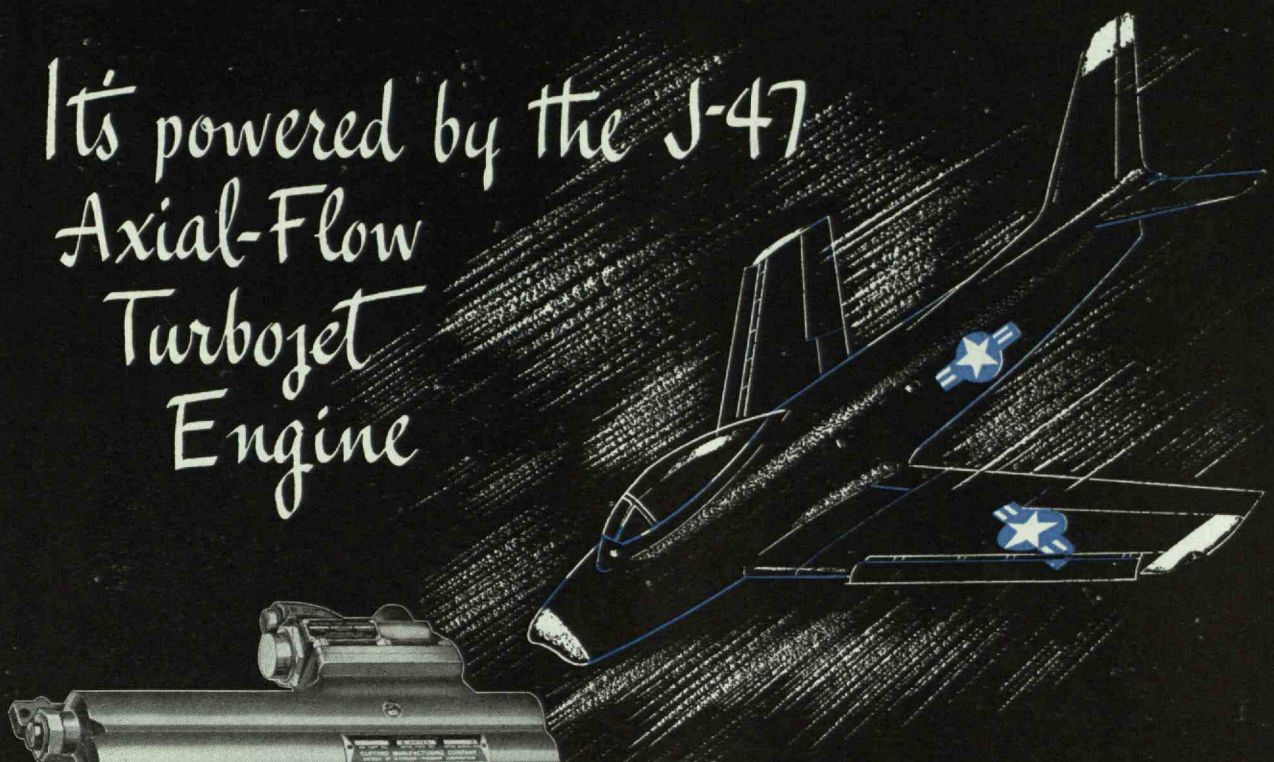
powers of imagination make it inescapable that we should not rest content with the goals of today, but should press forward, creating new hopes, new dreams, new values. This is the very core of humanity; this it is that lifts us above the level of the animals to a plane a little lower than the angels.

This gift is not without cost to us. For the ideals and aspirations which outrun our earthbound powers we pay a price in frustration. But do not regard frustration, disappointment, or failure as abnormal or unusual or unnatural for human beings. It is a hard, but not unworthy, price to pay. And it is , moreover, true that our highest ambitions and our loftiest moral judgments most easily fall prey to frustration. But we relinquish them at our grave peril. For they are precisely what gives meaning to all our skills, our efforts, our knowledge, and our lives.

A stern doctrine? Yes, but could we convince ourselves that we would change it, even if it were in our power to do so? This great institution, and others like it, and our vast society with its wealth of material resources do not derive from utilitarian ambitions, although these serve a valuable purpose. Our society and everything within it that endures would never have been established except for the moral judgments that through the centuries gave meaning to man's striving for material progress. In such judgments lies the justification for the privileges of thought and action which we so highly prize.



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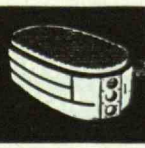

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Aircraft Bellows Assembly

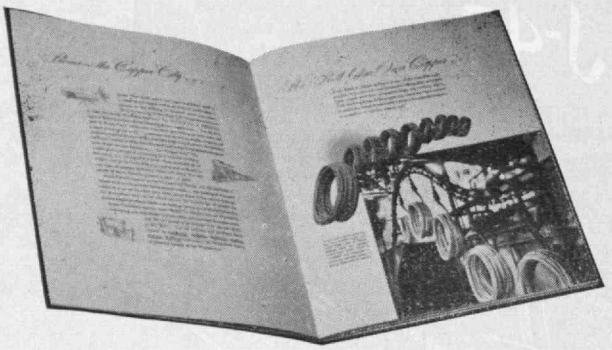

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INCENTIVES AND SATISFACTIONS

(*Continued from page 499*)

ment of critical spirit, and a sense of relevance, sincerity, integrity, exercise of the right to live vigorously and in freedom. I am, however, at liberty to quote from my own contribution to this publication. Thinking of the obligations of "the next voter" I said:

> I have been much impressed by the importance of voting and acting on issues with reference to the over-all values to the nation or to society, as distinct from the advantages to some local or special interest group. We quite properly decry self-interest in a person as his driving motive. We do not so generally deprecate the pressure group seeking its own interest, whether this be a labor union, an industrial concern, a chamber of commerce, or a community. I believe that loyalities to such groups have a legitimate place, but that too often these loyalties tend to prevail over what might be called the "general good." A relatively few men in public life rise above both personal selfishness and local self-interest, and it is these men who become real statesmen. I believe, therefore, that one good objective for the next voter is to identify and to support those causes and those political leaders who are devoted to the general good and are not dominated by special interests.

Apparently when I wrote this paragraph a number of weeks ago I had in the back of my mind the same general thought which underlies my talk to you today. But voting is just one aspect, though an important aspect, of the duties of a citizen. His first duty is to be the right kind of a citizen. When the right kind of a citizen has an important decision to make, his decision will be in the direction of what is sometimes called inclusively the "general good." His decision will be determined by a sense of loyalty and duty, by desire to do something creative and useful, by determination to devote his talents and his efforts to some work which will be of benefit to others, letting the benefit to himself take second place and trusting in the right outcome.

I think it has been evident from my remarks that I have given a very broad interpretation to the phrase in the text, "the kingdom of God and his righteousness." I have used this as a symbol for those objectives which are worthy, and constructive, and primarily unselfish. Let me bring this discourse to a conclusion by coming back to the consideration of your objective in coming to M.I.T. and the way in which you may proceed with this objective from this point on.

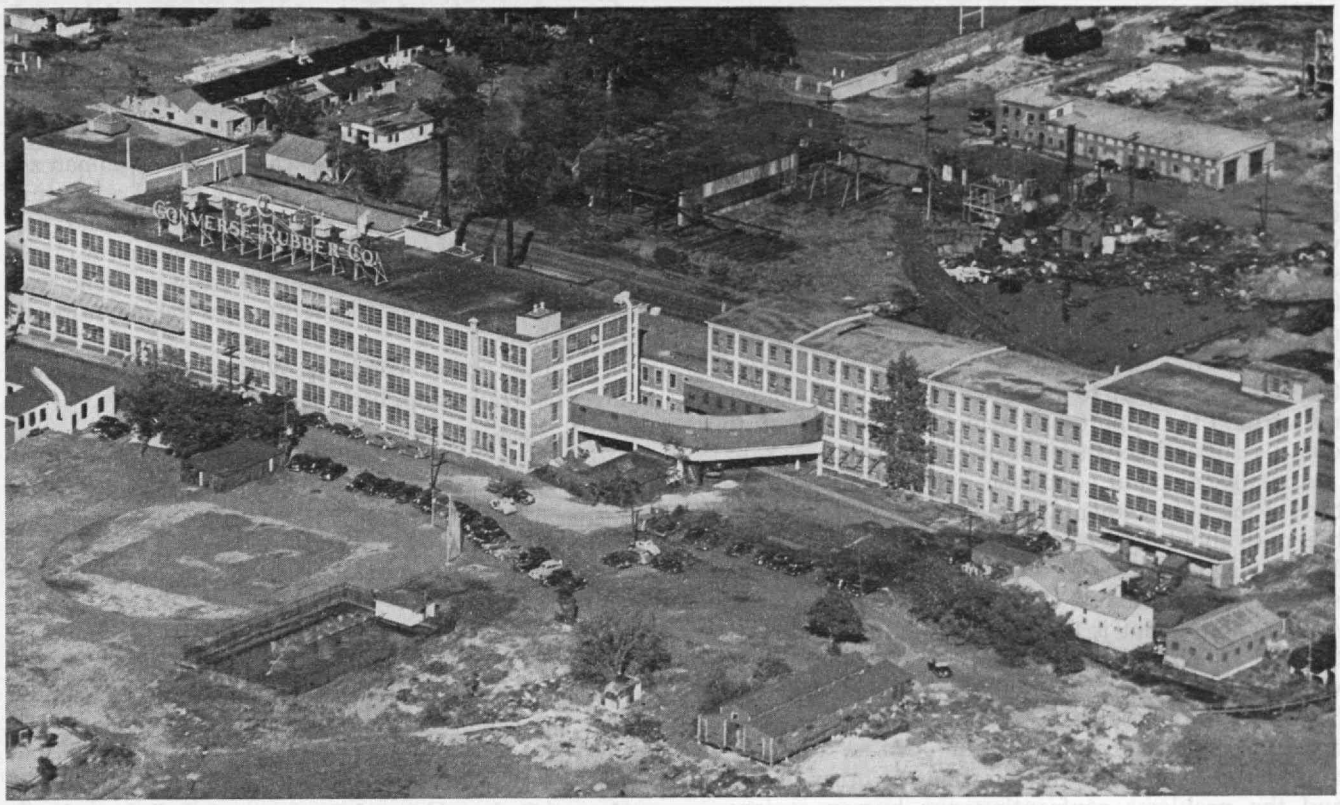
(*Concluded on page 538*)

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INCENTIVES AND SATISFACTIONS

(Concluded from page 536)

I once saw, written on the blackboard of a classroom, the following statement: "The purpose of a college education is not to enable you to earn your daily bread but to make each mouthful sweeter." There always seemed to me to be several fallacies in that statement. One of them was that it overlooked the fact that the satisfaction in earning one's daily bread may be the very factor which most sweetens it. Another fallacy, I have thought, is that it emphasized the self-satisfaction to be gained by the education rather than the opportunity which may be gained to do a useful and constructive job in life.

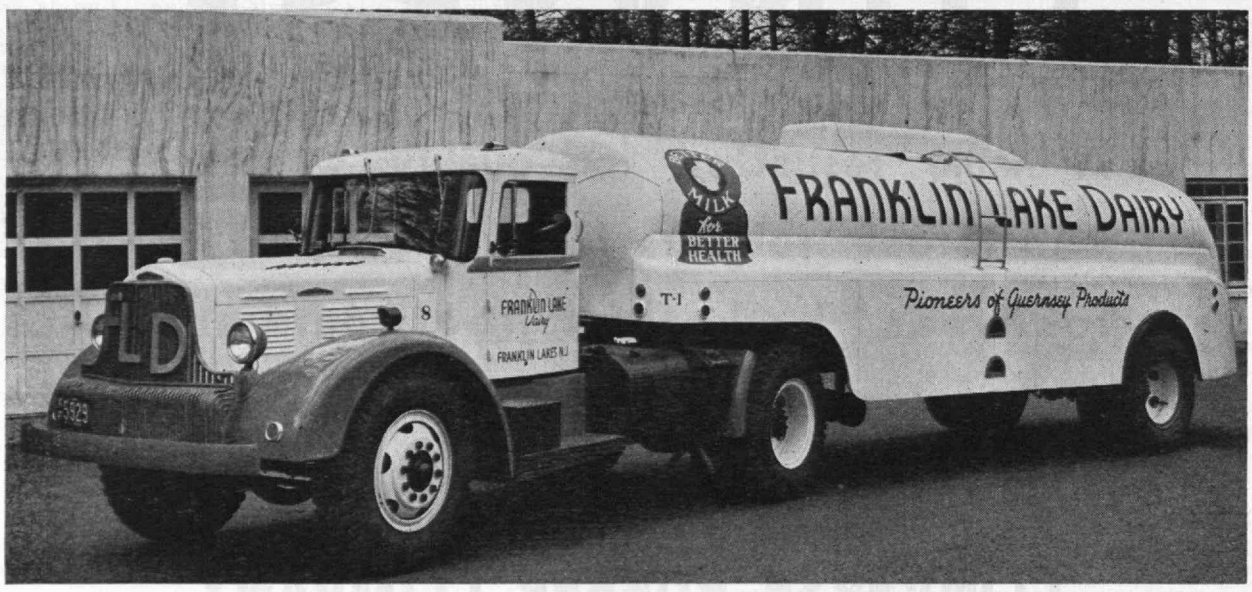
Actually, a sound education must have an admixture of many ingredients. One of these ingredients is the one about which our program is centered at M.I.T., namely, a professional education by which the student is prepared to enter a constructive career. Another ingredient is the analytical and disciplinary training which comes from the study of any subject, whether it be in science, engineering, architecture, or literature, or philosophy. Still another ingredient, and a very important one, is the gaining of an appreciation of the thoughts and aspirations of other people and the problems confronting our human society. These things and many others are the ingredients which in various proportions in different institutions, and with different instructors, and for different students, go into the educational program. Out of this program come young men and women who have some degree of preparation to meet the opportunities and the problems of the life which is ahead. We emphasize the training of the mind but we must never forget that it is not the mind alone which controls human action but that it is a great and complicated admixture of knowledge and cold analysis, on the one hand, and warm ambitions, prejudices and passions, on the other, and that out of this admixture there is in some way welded the character which provides the major incentive of life.

On this point Woodrow Wilson, though a great lover of scholarship, had the following to say:

> We speak of this age as an age when mind is monarch, but I take it for granted that if that is true, mind is one of those monarchs who reigns but does not govern. As a matter of fact, the world is governed in every generation by a great House of Commons made up of the passions; and we can only be careful to see that the handsome passions are in the majority.†

Whether we call them passions, or objectives, or ideals, or incentives, our great problem is to make every effort to see that it is what Woodrow Wilson called the "handsome passions," and what I have called the nobler incentives, which prevail in the determination of our actions and our careers. "Seek ye first the kingdom of God, and his righteousness: and all these things shall be added unto you."

† Howard Lowry, *The Mind's Adventure*, page 34 (Philadelphia: Westminster Press, 1950), $2.50.



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IS READING OBSOLETE?

(*Continued from page 511*)

tion in training time. Essentially, they reduced the problem, whatever it was, to a few understandable concepts. Our accomplishment was far from miraculous and, in fact, reminds me somewhat of a quote attributed to Boss Tweed in connection with the anti-Tweed cartoons in *Harper's*. "I don't care a straw for your newspaper articles," he said, "my constituents don't know how to read, but they can't help seeing them damned pictures!"

It seems to me that if you have something to say that needs saying to any man, woman, or child in America, something that requires quick understanding, that can be said and registered despite the competition of all the rest of life's many daily pressures — the best way to do it is with pictures. Movies, television, picture magazines prove this to be a fact, both in their successes and failures. For example, when newsreels, having worn out their novelty appeal, continued to be produced without *saying* anything, they failed. This occurred long before television came into our spectrum. Quite possibly movies are today suffering the fate of not saying enough to satisfy the public. I suspect that radio, despite its fantastic Hooper ratings, also was the victim of the same fate before the advent of television. And in the long run, television is going to have to learn that substance is a necessary prerequisite to any successful form of communication. The American people are growing up rapidly and are prepared to devour immense amounts of news, information and, yes, even culture. They may wish to receive it the easy way, and just what is wrong with the easy way? Why not use short, punchy phrases, pictures, diagrams, if they give more people a desire and ability to learn about a certain subject? Henry Steele Commager whose recent book, *The American Mind*,* is a great success, said that the Eighteenth Century title to the same book would have been *Prolegomenon to an Interpretation of Some Aspects of American Thought and Character from the Eighteen Eighties to the Nineteen Forties.*

The critics of visual methods of education are also the same people who deplore the cultural lag and the low level of knowledge on the part of the public. Do these critics think that wordy prose in small type is going to overcome this problem? As George N. Shuster, President of Hunter College, says: "The character of popular mass culture is henceforth bound to be influenced primarily by what people look at. Where the many critics of our visual age are wrong is that they fail to distinguish between a medium of communication and its content. Basically, there is nothing wrong with our media; after all the windows of Chartres Cathedral were 'visual aids.' Progress depends not so much on the vehicle but on the direction we take and how far we see ahead."

In my opinion, the various new mediums of communication are not a threat to printed matter. On the contrary, they are all, to a large extent, complementary rather than mutually exclusive. Each in its way

(*Continued on page 542*)

* New Haven: Yale University Press, 1950, $5.00.

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IS READING OBSOLETE?

(*Continued from page 540*)

and in its particular appeal to a certain class of society is stimulating the interest of the people along different lines and in different ways. To the average person each new interest makes him that much more receptive to further information and knowledge. As each American, thanks to education and these mediums, climbs the cultural scale, he becomes both a more valuable citizen and a better customer for these very mediums. The best measure of this state of affairs is that the habitual book reader also reads more magazines, sees more movies, looks at more newspapers than nonbook readers. He does not spend as much time on the radio, though he does listen more to public discussions that are broadcast.

Personally, I welcome the newer forms of communication for two reasons. They will, on the one hand, help educate the people and, in these days of trial for democracy, the slow ways of small print, the devious phrase and the literary discussion by the *avant garde* are no longer adequate. Our 150,000,000 people can only be good democrats if communications furnish the flow of information that will allow the people to make up their minds and stand united against the dangers that threaten freedom.

In this connection, I would like to quote from a very fine speech made recently by radio's Henry Morgan to a group of reporters, columnists, editors, and publishers. He said:

"Because of you people in this room I believe Owen Lattimore is a Communist. I also believe he is not a communist. Because of you people I believe F.D.R. was a genius and also that he ruined the country. I believe that there is more crime in this country than ever before and that our police are the best in the world. I believe that Eisenhower would make a great President except that I have read that military men don't make good Presidents and besides he will run if enough pressure is brought, he will not run, he can't run, he refuses to run, he doesn't want the job, you can talk him into it, he's trying very hard to make it look as though he doesn't want it, he's happy at Columbia, he's miserable, he's got a cold, he feels great.

You have made it possible for me to take five cents and buy, in one package, a new picture of President Truman, my horoscope for the day, fifteen comic strips and the stock market reports. And I've read some terrible things about you. You work for money. Advertising dictates your policy. The department stores dictate your editorials. Don't you think you'd be happier with some other system? Wouldn't it be nicer to have a bureau of some kind supervise your work? Then, if the bureau didn't like it, you could adjust or get killed.

Still in all, it's better than having people point at you and say: "There's a man who works for money." Somehow it's getting to be very un-American to work for money. It's also un-American not to work and to live on unemployment insurance. It's un-American to have social security and it's un-American to have such a small amount of social security. I strongly suspect that this is all your fault.

In short, you people in this room have put me, the average man, in a peculiar position. I now have to make up my mind for myself. As long as you keep doing that, as long as you keep forcing the man in the street to make up

(*Concluded on page 544*)

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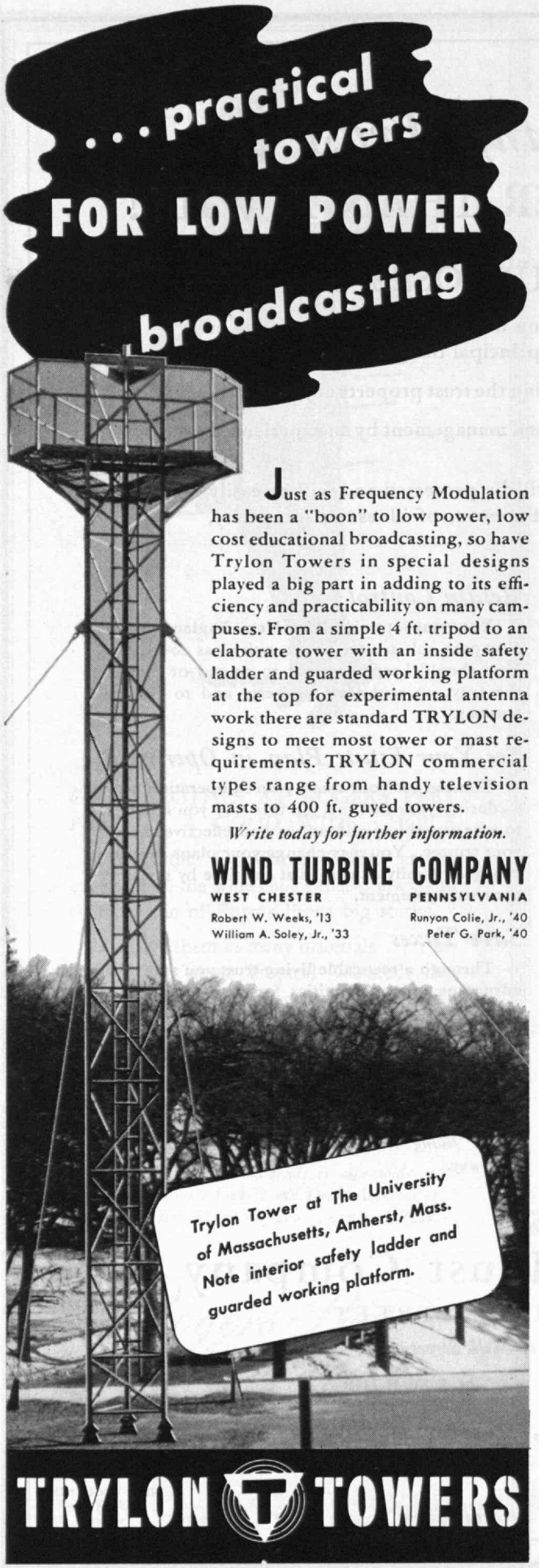
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IS READING OBSOLETE?

(*Concluded from page 542*)

his mind for himself, that's as long as we'll have the only working definition of democracy that's worth a damn.

The second reason for welcoming more competition is that the printed page desperately requires competition. It has only progressed as a result of competition, even though technically it has lagged. We do not have good paper at cheap prices; our presses are fine to look at but why does one need 500 tons of steel to put a dot on a piece of paper? The economics of distribution in the book field are antiquated. It costs $0.60 to produce a book which you can't sell profitably for less than $4.00. The newspapers and many magazines look just about the way they did 20 or 30 years ago except that the ink comes off on your hands more readily. And many of the editors in this nation have failed to accept new ideas. It was only eight years ago that the great New York *Times*, with great reluctance, started to print photographs on the front page.

The phrase that appears most often in printed matter is "We are living in times of change." Perhaps the only trouble with those of us in the publishing business is that we are the last to recognize the need for change.

THE PROMISE OF TECHNOLOGY

(*Continued from page 524*)

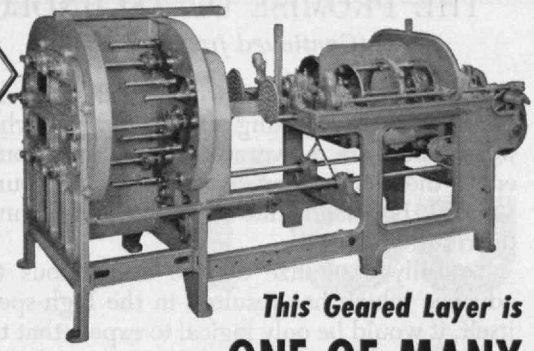
warrant the development of the required plastic and several new automatic machines to put the books together.

Besides making it possible to achieve the desired objective, the change opens the way for another important step for simplification and labor saving. It makes possible the development of a new type of high-speed printing press, employing a variable length belt instead of a fixed plate cylinder, which can print and collate the pages of an entire book and deliver them as a unit directly to the binder, thus providing full flexibility of numbers and size of pages. The savings are evident for we can thus eliminate entirely the cumbersome and arduous procedure of folding, storing, and gathering of signatures. The experimental work in this project has been completed, and the next major step in reduction of effort in book production is not far off.

If time permitted, it would be of interest to describe the necessary systematic survey and research which defined the individual problems to be solved to arrive at the new procedure, and which led to the development of a satisfactory flexible rubber plate, new adhesives, new equipment for casing-in, jacketing, and cartoning.

Briefly casting our eyes to other phases of the printing industry for examples, it is not too difficult to find anachronisms in plants which might be considered modern by today's standards, and where the more general application of technology can create vast improvement. For instance, in the printing of the newspaper today, we witness a spectacle of an efficient

(*Continued on page 546*)



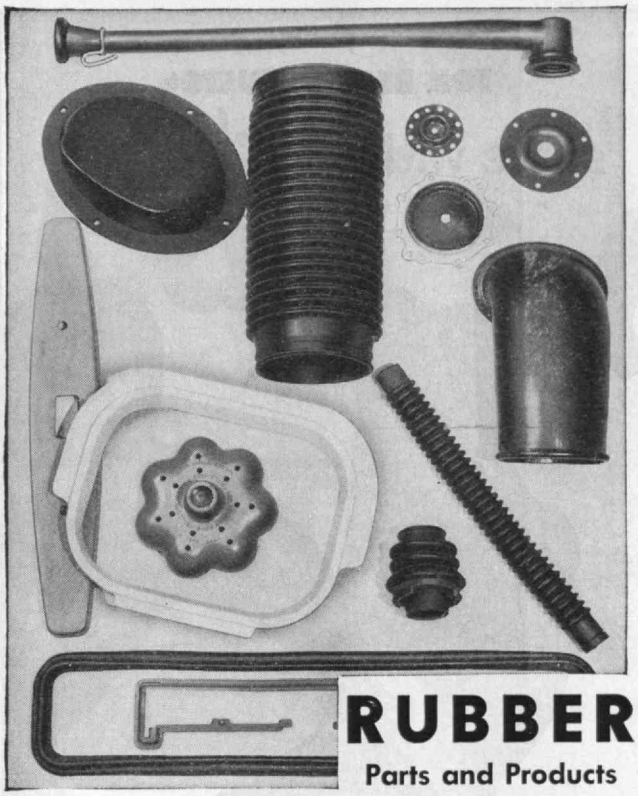
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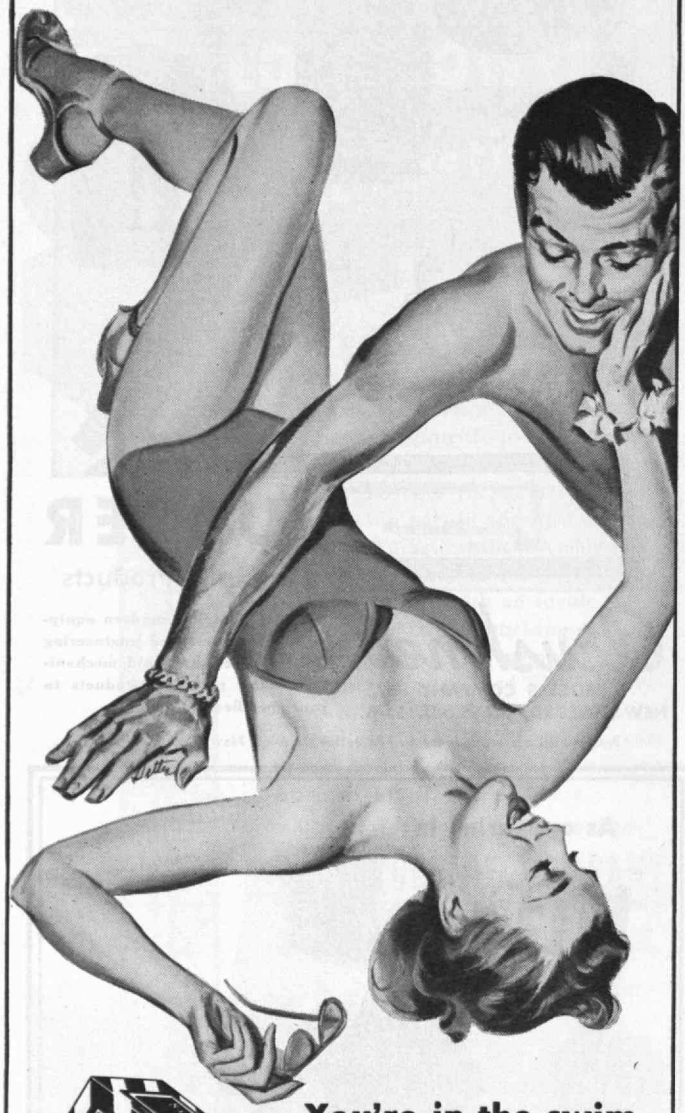
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THE PROMISE OF TECHNOLOGY

(*Continued from page 544*)

high-speed mechanism which will print and fold newspapers at amazing speed, and yet when these newspapers are delivered from the press, on conveyers to the mailing department, they are counted and stacked by hand into miscellaneous bundles for distribution.

To fully capitalize on the tremendous technical advance which has resulted in the high-speed press itself, it would be only logical to expect that the newspapers should be prepared for delivery by some automatic means. We know that can be done, and that it is possible not only to stack and package mechanically, but to mechanize the whole system of handling subscription lists with electronic devices, to control addressing and packaging, and the placing of the correct number of newspapers in each package. The reduction of over-all manufacturing costs, made possible by addition of such a mechanism, would be far greater than that attainable by further development of the printing press alone, and would improve service to the public accordingly.

In another direction we observe the great need for improving methods and equipment to reduce the cost of composition and to make short runs possible. Such a development is of vital importance to all forms of publishing, for it would not only lessen direct costs, but its influence would probably do more to bring out original thoughts than any other single improvement.

Today the cost of composition and the making of plates is high, and the only way by which the unit cost can be kept down is by producing the same printed matter in large quantities. Such conditions constitute a formidable barrier to the acceptance, for publication, of the work of the young untried author, who may turn out to be a best seller some day; by the same token, they are hardly conducive to originality on the part of the editorial staff. Perhaps the solution lies in the direction of photocomposition and plastic plates – perhaps by other means, but one way or another a solution is necessary and certainly possible.

The consideration of raw materials now coming into existence also offers important opportunities. The production of a new type of bleached ground wood paper points to the possibility of a substantial reduction in the basic cost of printed matter. Quick-drying plastic base inks can substantially reduce the processing time and the size of printing machinery. New adhesives, which can be formulated to meet almost any needs, can greatly facilitate the manufacture of books and enhance their quality.

The reading of books has greatly increased since the termination of World War II and, likewise, the construction of new homes. It is not impossible that this combination may produce a tremendous market for the hard-cover book to fill new book cases if we can reduce the cost of such printed matter.

The applied research to develop new manufacturing processes and equipment should not be considered to be in the same category as the basic research required to determine trend and the logical objectives for the industry as a whole as far as sponsorship

(*Concluded on page 548*)

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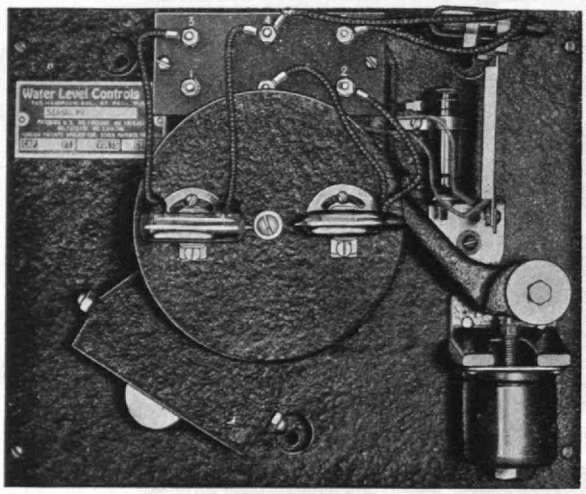
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THE PROMISE OF TECHNOLOGY

(*Concluded from page 546*)

is concerned. The direct beneficiaries of such work are individual concerns, either manufacturers of printed matter, or builders of machines. There is the opportunity of proprietary return from invention and direct benefit from the reduction of manufacturing costs. It would be logical, therefore, to expect individual firms to provide this support. The question remains – will it be forthcoming when needed? The interest of machinery builders is naturally to continue the line of machines already in production, while printing concerns tend to stretch the life of their equipment sometimes far beyond the point of utility. It is not difficult to find opportunities for the development of equipment which can produce high returns in terms of immediate savings. Failure to take action seems to stem more from a lack of perspective than lack of opportunity. Perhaps a stimulus to progress, in this phase of technological development, can be found in the utilization of independent research and engineering organizations which can be called in to analyze and solve specific problems on a project basis. Thus, neither the manufacturer nor the machine builder would be required to maintain a permanent research staff, but could transfer the burden to outside organizations specifically equipped for work of this type.

In my remarks today, I have stressed the need for intelligent systematic research as a guide to technological development. In closing, I should not neglect to point out the need for quality in research, to safeguard the funds which must be devoted to this work. The failure of mediocre thinking to bring about useful results or, paradoxically, the success of ill-chosen costly developments, which bring little economic benefit, is discouraging and sometimes ruinous.

In comparison with the development of other younger industries, such as motion pictures, radio, and the like, development of the graphic arts industry has lagged behind. Perhaps because of its heretofore unchallenged influence on the affairs of man. Perhaps because its age-old traditions stifled or discouraged adventure. Whatever the reason may be, it is not a good one, for the road to future progress lies wide open to those who have the vision and will to employ the consummate technical skill and amazing tools we can command. Technology will never fail to bring us what we have the wisdom to ask for and the courage to pursue. Therein lies its promise.

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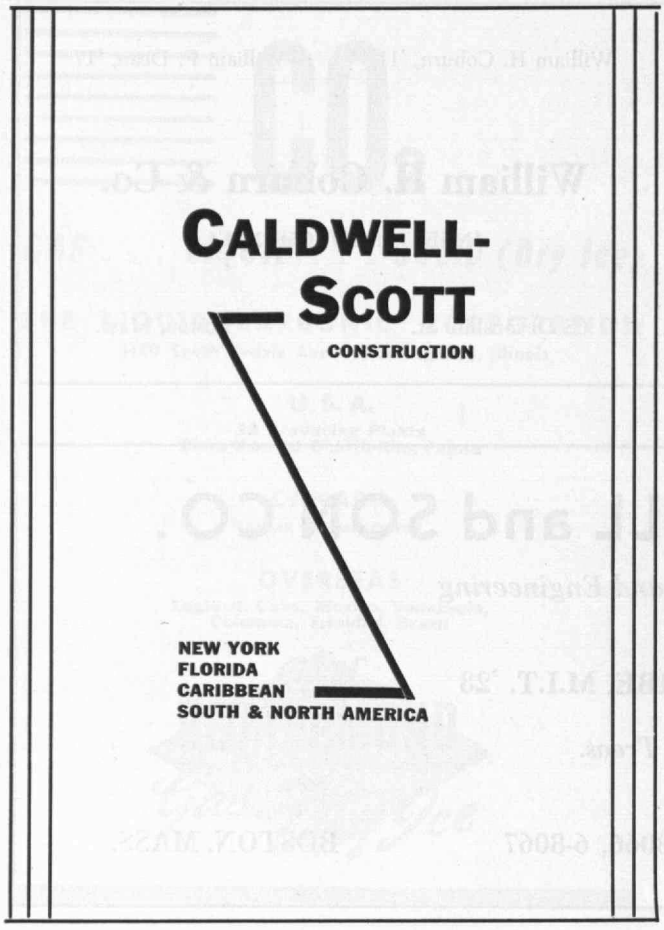
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OUR SHARED CONVICTIONS

(*Concluded from page 505*)

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We who continue here have gained from working with you and have cherished the opportunity of sharing with you the responsibilities of this community of scholars. As you take your place as active, producing, creative citizens of America, you have a mandate as educated men and women — you of the mid-century class — to live the American credo if you want the American credo to live. By your actions you can demonstrate as no words can do that American democracy does live and will live — proud and impregnable. You will serve this country best by going forward with confidence in our goals and our mission, remembering that always, as Lowell said of America,

"They love her best, who to themselves are true,
And what they dare to dream of, dare to do."

In the confidence that these shared convictions are shared by you, I wish you the satisfactions of a life of ideal aims and practical accomplishment, and bid you Godspeed.

PRINTING—MOTHER OF PROGRESS

(*Continued from page 509*)

wherein today much or all of the work still is being done by hand labor. The trend is definitely apparent today in the larger and more progressive establishments. Time does not permit of listing and describing some of the quite remarkable and truly revolutionary improvements already evident in many establishments, or on the drawing board, or under prototype production. It is certain that, generally speaking, the actual costs of graphic arts production, regardless of type of product, are not headed for lower levels, by themselves alone. It is evident that the first result of this awakened interest in rapid technological improvement can serve primarily to offset the increasing labor costs of production thus far encountered; after that salutary result is assured, then we may look for efforts and results in the stabilization of long-range

(*Continued on page 552*)

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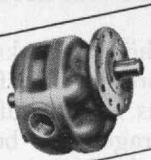
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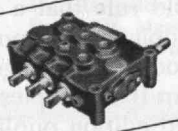
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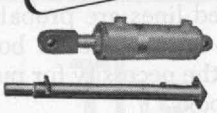
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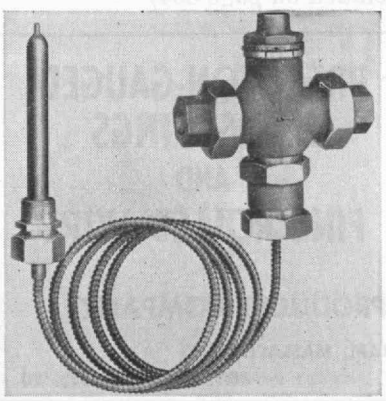
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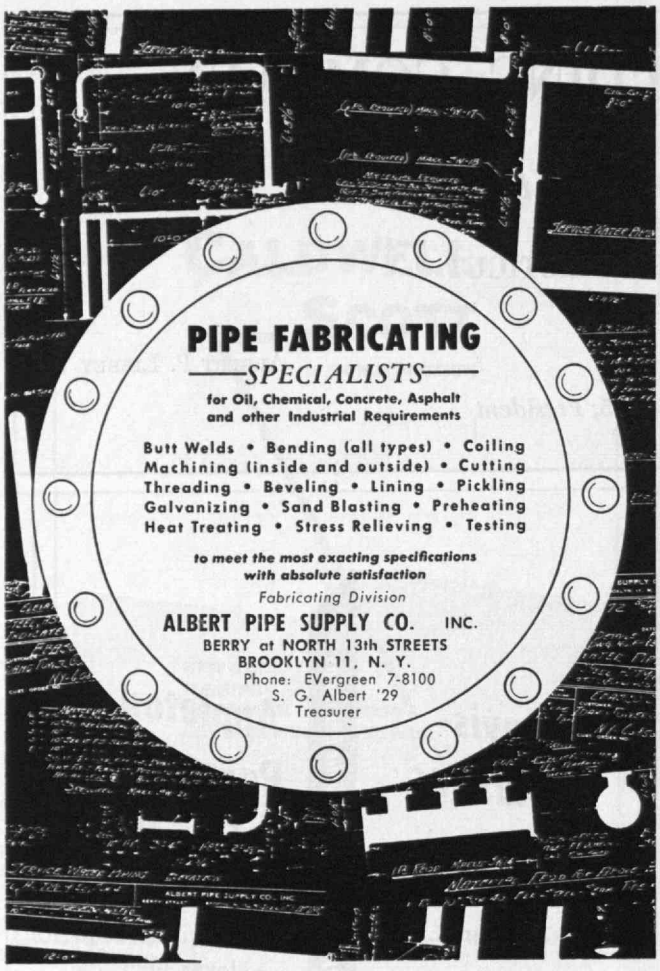
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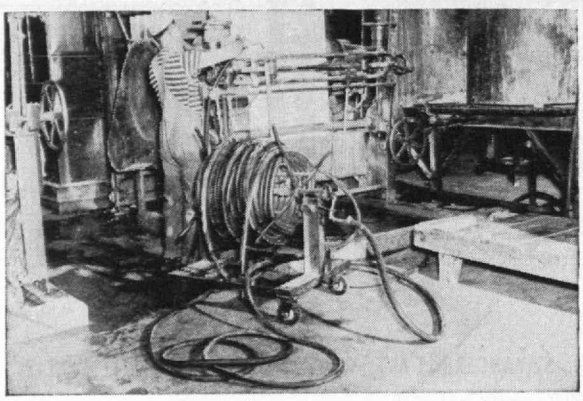
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PRINTING—MOTHER OF PROGRESS

(*Continued from page 550*)

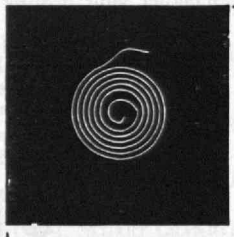
planning and consequent less fluctuating costs in manufacturing.

One hears daily the plaint of book publishers, for example, that the veritable top in pricing levels has been reached in all avenues of book publishing: concern is daily evinced that the continuing top volume of sales, so essential to maintain "a better than break-even operation" for both publisher and manufacturer cannot be maintained if costs are to push individual unit sales prices any higher. One book publisher is experimenting with publishing simultaneously two editions of the same title – one at the popular $1.00 price, the other at the usual $3.50 level. Strangely enough, the rumors observed to date indicate that this sales policy has not lowered the sales of the higher priced book, at the same time providing a tremendously increased sale of the popular priced edition, which certainly is profitable to the publisher. Is this an evidence of a trend that will be expanded to other publishers? The publishers themselves will need to answer that question.

It is a known fact that the publishers of books in the smaller editions are hard hit by present manufacturing cost levels. One publisher has been credited with the statement that, for the average trade book selling in the $2.50 range, the old rule that a minimum first edition sale of 5,000 copies would put the publisher "in the clear," must today be changed to cover a first edition of not less than 10,000 copies. The university presses and the limited edition publishers of technical and quite specialized lines are probably most concerned by the current initial costs of book publication. One hears much of the necessity for publishing more and better-made books.

Much conjecture is heard respecting the probable effect of television on the buying interest of the book-reading public. It will be remembered that the same fears were rampant when automobiles first became available in the popular priced ranges. Similar worries were expressed when radio and the talkie movie first appeared. More recently, in the educational text field, concern was shown over the growth of the visual-aid methods undergoing exploratory tests in that field. Educators have even made surveys and criticized the parents in whose homes television sets were enjoyed – demonstrating that the sons and daughters of such homes were notably the poorest students in their classes. Admittedly, youngsters could study and listen

(*Concluded on page 554*)



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PRINTING—MOTHER OF PROGRESS

(*Concluded from page 552*)

to the radio at the same time; probably you did it, too. But endeavoring to study and follow the television screen at the same time is a different problem, to be sure!

Notwithstanding, up through the years, every form of communication and education has steadily advanced in volume and generally in quality. When the reported army of war babies hits the elementary schools of our nation in 1954–1955 we will all share the opportunity and responsibility of providing schools, teachers, textbooks, supplies, and the many other needs of that top-volume of students.

Newspapers, periodicals, books, pamphlets, and every form of the printed and otherwise reproduced word have moved forward with all other activities. I am constrained to believe that they will continue their advance, equal to or better than some of the competitive offerings.

Nevertheless, believing that I know more about the graphic-arts industry, and especially the field of bookmaking, than any other industrial activity, I do offer this admonition to those in our field: we must make new and greater effort in the fields of research, invention, and technological problems inherent to our field. To become complaisant, self-satisfied, or unwilling to work, both individually and collectively, with other manufacturers in our industry for the "holding of the line" in cost-upward spirals, through genuine accomplishment in technological engineering, will doom us to destruction as an industry.

Truly, printing has been the "Mother of Progress," and it must continue to be both that "Mother" but, at the same time, the "handmaiden of technological development" in a great and most essential industry. In the memorable words of one of our British cousins:

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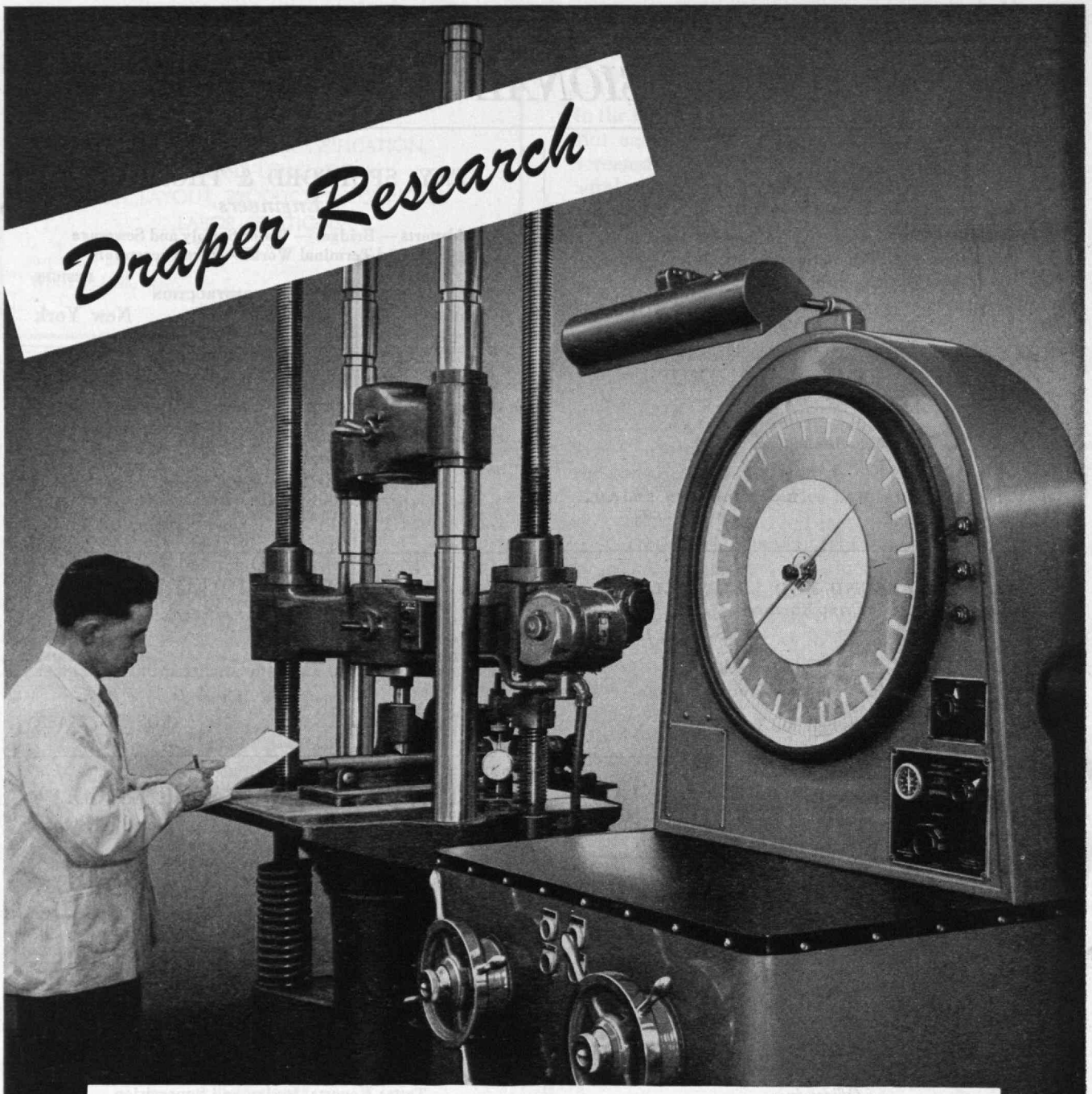
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Alumni AND Officers IN THE News

The Honored

In memory of the late HARRY M. GOODWIN'90, former Dean of the M.I.T. Graduate School, two awards have been established at the Institute to encourage graduate student achievement in contributions to teaching. The Goodwin Medal will be awarded in recognition of conspicuously effective teaching of a junior staff member who is also a graduate student. It will be accompanied by a cash prize up to $1,000. The Goodwin Premium, consisting of a citation and a cash prize up to $500, will be awarded to a graduate student whose thesis presents conspicuously meritorious original research which embodies striking originality, ingenuity and convincing presentation of a contribution to knowledge.

Dr. Goodwin retired in June, 1940, with the rank of Honorary Dean. He died on June 26, 1949. The awards have been established by a gift of Dr. Goodwin's widow, Mary B. Goodwin, and their son, Richard H. Goodwin, a professor at Connecticut College.

WALTER HUMPHREYS'97 presented a certificate of Honorary Membership in the Alumni Council to HORACE S. FORD at the Council's 276th meeting held on May 22, 1950. Mr. Ford, who retired on July 1 as treasurer of the Institute, is the fourth person in the history of the Alumni Association to receive this honor.

ROBERT E. WILSON'16 was presented with a certificate of appreciation, dated May 3, 1950, by the American Petroleum Institute "in acknowledgment of meritorious service to the petroleum industry through his participation in the work of the Institute. . . ." Dr. Wilson was also recently honored by the citizens of Boston when he was presented with the Award for Industrial Statesmanship on May 18 during the Boston Jubilee.

ROLF ELIASSEN'32 received the Westinghouse Award at the annual banquet of the American Society for Engineering Education held during the Society's convention at the University of Washington, Seattle, Wash., on June 22.

M.I.T. crew members observed the fulfillment of their wish to have a new eight-oared Pocock racing shell dedicated and christened the "JAMES B. MCMILLIN," in appreciation of the efforts of the Institute's crew coach, during ceremonies held at the M.I.T. Boat House on June 8. The purchase and dedication of the new shell was prompted by the crew winning the Eastern Intercollegiate Rowing Championship at Annapolis on May 13.

Orally

ERNEST C. CROCKER'14 discussed "The Chemistry of Flavors and Odors" at a meeting of the Connecticut Valley section of the American Chemical Society held on May 15 in Northampton, Mass.

ROBERT E. WILSON'16 addressed the graduating class of the College of Wooster on June 12.

IRVIN R. MITCHELL'30 was invited to speak at a dinner meeting of the American Society of Safety Engineers in St. Louis on May 8. His subject was "Safety as Related to the Use and Care of Wire Rope and Slings." Mr. Mitchell also gave this talk before the Depot Safety Coordinating Committee at the Granite City Engineer Depot in Granite City, Ill., on May 23.

JOHN W. POCOCK'39 delivered an address entitled, "Industry Views Industrial Planning for Defense" before the Industrial College of the Armed Forces in Washington, D. C., on May 3.

THOMAS R. P. GIBB'40 spoke before the Rhode Island section of the American Chemical Society at their May meeting held at Brown University. Dr. Gibb's subject was, "Metal Hydrides."

In Black and White

GREGORY M. DEXTER'08 and Louis C. Dillon are the coauthors of the article, "Economy in Plant Layout," published in the *National Bottlers' Gazette* of March, 1950.

THOMAS C. DESMOND'09 wrote an article that appears in the June, 1950, issue of *Coronet* entitled, "The Coroner Racket: A National Scandal."

HORATIO W. LAMSON'15 wrote, "Advantages of Toroidal Transformers," an article that appears in the May, 1950, issue of *Tele-Tech.*

RAYMOND STEVENS'17 is the author of "The Meaning of Research to American Industry," published in the Spring, 1950, issue of *Progress.*

GEORGE B. DARLING'27 queries, "M.D.s Wanted—Can We Pay For Our Medical Schools?" in an article printed in the June, 1950, issue of the *Atlantic Monthly.*

WILLIAM R. HAWTHORNE'39 and STEPHEN L. BRAGG'49 are the collaborators of the article, "Some Exact Solutions of the Flow Through Annular Cascade Actuator Discs" published in the April, 1950, issue of the *Journal of the Aeronautical Sciences.*

THEODORE H. H. PIAN'44, GABRIEL ISAKSON'47 and RAYMOND L. BISPLINGHOFF, staff, are the authors of an article that appears in the May, 1950, issue of the *Journal of the Aeronautical Sciences,* entitled, "Methods in Transient Stress Analysis."

PHILIP L. DE BRUYN, staff, and ANTOINE M. GAUDIN, staff, are the coauthors of the article, "Research Studies in Mineral Engineering Using Radionuclides," which appears in the June, 1950, issue of *The Scientific Monthly.*

JOHN R. LOOFBOUROW, staff, has penned an article on "Microspectroscopy" that appears in the May, 1950, issue of the *Journal of the Optical Society of America.*

Obituary

IRWIN EMMONS'82, May 1.
WILLIAM ATKINSON'88, April 21.*
FRANK P. CHENEY'88, September 15, 1949.*
JOHN C. RUNKLE'88, June 1.
ANTHRINE W. LA ROSE'90, December 2, 1943.
EDWARD B. RANDALL'93, January 18.
HENRY C. WATERMAN'93, September 27, 1949.
WILLIAM H. QUINER'95, June 3.
NATHAN H. DANIELS'96, March 2.*
FRANK E. COOMBS'98, September 9, 1948.*
FREDERICK KLEINSCHMIDT'98, in April, 1949.*
HENRY R. ROBINSON'98, January 24.*
CLANCEY M. LEWIS'99, May 17.
FREEMAN A. COBB'04, April 12.*
WILLIAM A. HYDE'04, April 27.*
EDMUND S. CAMPBELL'06, May 8.
FREDERICO LAGE'06, April 2, 1947.
CARL F. NORTHRUP'06, March 24.*
KILLEY E. TERRY, JR.,'06, April 1.*
JAMES S. GROFF'09, April 5.*
STILLMAN BATCHELLOR'10, January 23.*
HAROLD H. HODGKINSON'10, October 10, 1947.
CARLETON F. PIPER'10, March 27, 1943.
CHESTER R. GARDNER'14, April 11.*
DON M. KELLY'14, August 15.*
CHARLES S. BOUCHARD'15, January 31.*
WILLIAM H. GABELER'15, April 29.*
ARTHUR C. HAWGOOD'15, February 24, 1945.
KENNETH HUSE'15, February 4.*
STEPHEN J. MARKHAM, JR.,'17, April 19.*
BENJAMIN S. WELLS'17, April 26.*
EDWARD J. SCANNELL'18, April 11.*
MELVIN C. ROSE'21, April 23.*
J. ROSS ALLEN'22, April 20.*
WILLIAM S. CLARKSON'23, March 26.
EDWARD B. MAYNARD'23, March 17.*
MRS. BYRTENE C. ANDERSON'24, April 3.
EARL M. EDGERTON'25, March 26.*
ELMER P. RIPATTE'25, April 23.*
LUCIEN J. DRAPEAU'26, November 21, 1949.*
B. E. MORRISS'26, November 21, 1949.*
JOSEPH W. HAMMOND'27, April 18.*
KENNETH F. WHITCOMB'29, January 16, 1949.
HARVEY N. WEED'30, in July, 1943.
ROBERT F. KNOWLTON'35, May 11.
PHILIP L. HARRIS'43, May 9.*
RICHARD P. GALE, JR.,'49, in May, 1946

**Mentioned in class notes.*

News FROM THE Clubs AND Classes

CLUB NOTES

M.I.T. Club of Central Massachusetts

The annual Ladies' Night meeting of the Club was held on May 22 at Sterling Inn, Sterling, Mass. As usual, a fine dinner served under the direction of Ralph Mahony'18, and Mrs. Mahony, proprietors of the Inn, was enjoyed by the 56 members and guests attending. Max Levine '25, President of the Club, presided and introduced the speakers, Professor William L. Campbell'15, Head of the Department of Food Technology at M.I.T., and Harold C. Dudley, Director of the New England district of the M.I.T. Development Program. Mr. Dudley outlined the aims of the Development Program and showed the movie, "M.I.T. at Mid-Century," which proved very interesting to the members and their wives. Professor Campbell brought us up to date on many of the new developments at Technology. The developments in the field of Food Technology were of particular interest to the women, and Professor Campbell's talk on this subject brought many questions from the audience. We were very much intrigued by the new method of sterilization of food without heat by means of radiation, and by the use of radiation in the treatment of cancer.

The report of the nominating committee, Ernest P. Whitehead'20, Chairman, Robert H. Brown'22, and W. Franklin Baxter, Jr.,'34, which recommended the re-election of all present officers, was accepted by the membership. They are: Max Levine'25, President; Howard F. Atwood'32, Vice-president; Robert N. C. Hessel'27, Treasurer; Donald M. Whitehead'45, Secretary; Warren H. Howard '44, Assistant Secretary; and Arthur J. Lariviere'35, W. Franklin Baxter, Jr.,'34, Thomas P. Kelly'18, Robert G. Clarke'35, George R. Blake'39, Frederick E. Mader '32, and David L. Sargent'38, Executive Committee.

Alumni present were: Harry M. Latham'93, Herbert S. May'02, Harry S. Kendall'04, Andrew B. Sherman'06, Stanford H. Hartshorn'11, Rudolph F. Zecha'14, Thomas P. Kelly'18, Ralph G. Mahony'18, Ernest P. Whitehead'20, Robert H. Brown'22, Max Levine'25, Roger R. Smith'26, Robert N. C. Hessel '27, Harry N. Hardsog'28, George D. Manter'31, Howard F. Atwood'32, W. S. Crowell'32, Frederick E. Mader'32, W. Franklin Baxter, Jr.,'34, Gregory M. Korjeff'34, Robert G. Clarke'35, Arthur J. Lariviere'35, Harold McCrensky'38, George R. Blake'39, Donald M. Whitehead'45, Milton Robins'48, and Benjamin D. Cowley'49.

In the absence of Obie Denison'11 the singing was led by Bob Brown. An executive committee meeting will be held early in the fall to plan the meetings for next year. – DONALD M. WHITEHEAD'45, *Secretary*, 464 Salisbury Street, Worcester 5, Mass. WARREN H. HOWARD'44, *Assistant Secretary*, in care of General Electric Company, 507 Main Street, Worcester 8, Mass.

The M.I.T. Club of Chicago

The members of the Club attended the annual President's Dinner at the Walnut Room of the Bismarck Hotel on April 27. John ('21) and Mrs. Barriger had in their party, in addition to Dr. and Mrs. Killian, James McGowan'08, President, Campbell Soup Company, Mr. and Mrs. E. A. Fulton ('30) of the M.I.T. Club of St. Louis, Dr. and Mrs. S. Hopper ('33), Tom Cooper, and Stanley Barriger. It was also a pleasure to have Don Severance'38, Secretary of the M.I.T. Alumni Association, with us. Don was making his first appearance at one of our regular meetings.

Among those attending this event were the following: Alfred S. Alschuler, Jr.,'35, John C. Austin'36, D. P. Barnard'21, H. M. Barber'18, Herman Bartholomay, Jr., '41, Leonard Bezark, Jr.,'49, Jessie S. Blouke, L. H. G. Bouscaren'04, Tully Bradford'45, C. C. Bray'22, E. P. Brooks '17, Winston R. Burrows'26, George H. Burt'20, W. P. Cadogan'41, P. L. Coleman '23, Joel Connolly'16, R. D. Cooper'21, George Daskal, Jr.,'47, Arthur Demars '31, Laurence E. Dowd'46, Otto K. Eitel '24, James P. Ferrall'17, W. J. Frisbie, Jr., '24, Paul Gerhardt'47, Lonsdale Green'87, B.-W. Grenshaw, G. G. Hatch'48, Steven Heller'43, J. I. Herlihy'39, S. A. Hoffman '16, Sam Hutchins'39, J. R. Hooper'27, Earl D. Hoyt'48, Harold T. Howe, Bruce T. Humphreville'26, Stanley M. Humphrey'28, Stephen W. James'41, J. H. Johnson'43, Edward O. Jones'27, L. E. Jones'32, Albert L. Kaye'31, D. H. Keck '25, B. J. Knauer, Edward J. Koatovil, Raymond F. Koch'41, P. F. Lavedan'20, L. B. Lea'46, B. S. Maximoff'36, Leonard N. McKibben'49, Frank McKenna'30, R. C. Meissner'43, Louis A. Metz'23, A. J. Miller'41, Clarke C. Miller'23, Philip W. Moore'01, William A. Murphy, Jr.,'39, H. C. Neidle, David Nicoll'31, Sherry O'Brien'17, Frank D. O'Neil'25, Jack C. Page'48, Harvey S. Pardee'09, Robert W. Peach'47, J. G. Praetz, Jr.,'28, G. M. Proudfoot'04, John K. Reddersen'47, Robert S. Reebie'43, Leonard W. Russum'47, A. T. Scannell'08, R. E. Schmidt'87, William R. Schuler'40, W. D. Shepard'20, Benjamin H. Sherman'19, S. T. Smitters, E. W. Spannhake'33, J. B. Spaulding'24, I. Harry Summer'33, Henry C. Taintor '21, D. K. Taylor'26, Charles H. Thumm '33, R. C. Wallace'27, Charles B. Whitmore'49, John H. Wills'26, D. S. Yoblong.

In connection with a recent trip the Chicago group made to French Lick, I have received the following very interesting letter from Lonsdale Green'87: "Browsing over the club notes in the January Review, I noticed your mention of the West Baden Hotel. (Now a Jesuit College.) There are two men still living who were responsible for its design and construction. First, Mr. Ballard who owned it. He had the idea of an indoor circular glass-covered room that would appeal to winter visitors. Then he employed a country architect who came from Charlestown, W. Va., a relative of the wife of Ballard. The job landed in the office of the Illinois Steel Company. The year was 1900. Had it been later, the job would have been turned over to the American Bridge Company that became a part of the United States Steel Company. But before that big concern was organized, we in the Illinois Steel Company had a monopoly of most of the skyscrapers. The men in the drafting room of the Illinois Steel Company who designed the dome of the roof were Oliver Westcott, William Allen and myself, who was soon to become the chief draftsman over a force of 49 men.

"We planned in the center an upright steel tube about six feet in diameter. From this center radiated 24 wedge-shaped trusses, each riveted to the center tube. The lower narrow end of these trusses were riveted to 24 connected beams which, in turn, rested on the brick walls around the large lobby. On the problem of erection, we first built a wooden tower and by a system of measurements and plumbbobs managed to get the center of the steel tube exactly in its place and at the right height. At this time, I have forgotten the exact span but my recollection is that the horizontal width of the trusses was 75 feet. Twice 75, plus the width of the tube, would be 156 feet. Other details included the matter of purlins and light tees to hold the glass, with light copper or galvanized iron covering the joints to prevent leakage of rain. On the lower wall of the entrance, the sub-contractors, including the name of the architect and of course the Illinois Steel Company, were perpetuated on a large bronze tablet.

"Other domes may be high but none have as much span as the one at West Baden. Your fellow pilgrim, Louis Pirola, 'may know differently,' but the statement as to width has never been doubted.

"Mr. Westcott's son, a graduate of the University of Illinois, is a practicing engineer in Chicago and has been specializing in cantilever balconies for theaters that have no columns from the lower floor to hold them up. At one time, in 1925, I assisted the elder Westcott and his son when they had a rush of work and we put through the Granada Theater, near Devon and Sheridan Road. On further thought, I believe Ballard and Oliver Westcott are not now living. Allen probably is, as the last time I heard of him, he was building commissioner for the city of Cleveland." – BENJAMIN H. SHER-

MAN'19, *Secretary*, The Firm of Charles W. Hills, 53 West Jackson Boulevard, Chicago 4, Ill.

M.I.T. Association of Cleveland

The last meeting of the 1949–1950 year was held on May 17 at the University Club and provided a closing meeting which was as good as could have been desired. Dr. John Victoreen talked of his life's work, one of the most interesting subjects most of us had ever heard. Victoreen and his company, the Victoreen Instrument Company, have been engaged for many years in detecting and measuring radioactivity. We were filled with alpha and beta information sufficient to explain radioactivity to some, and depressing others more deeply in the muddle of confusion. Frank Massa'27, Joe Keithley'37, Fred Reuter'38 and a few others (Howard Ferguson'27 threw in some intelligent questions) understood the cosmic edification. The demonstrations of the Geiger counter were a high light of the evening.

The mysteries of the annual elections stupefied the group beforehand but really left the Alumni with sincere respect for a political organization which can secure such unified co-operation with the nominating committee. Bill Loesch'21 served exceedingly well for the past two years and left affairs well arranged for the incoming president. The nominating committee of Chairman Al Gould'10, Doc Smith'23, and Howard Ferguson'27, selected Bill Sessions'26, President; Chuck Smith'40, Executive Vice-president; Dick Valentine'33, Treasurer; with Dick Young '37, Secretary and the only carry-over from the old regime. The new executive committee includes the above new officers and Edgar H. Weil'13, President, the Vitreous Steel Products Company; Walter F. Munford'23, Executive Vice-president, the American Steel and Wire Company; and S. Floyd Stewart'24, President, the Leece-Neville Company. We're off to the best year ever with that slate. The Scholarship Committee of Chuck Reed'20, Bill Loesch'21, George Merryweather'34, Lew Fykse'41 and Honorary Secretaries Bill Sessions'26, Howard Ferguson'27, Hank Steinbrenner'27 and Dick Young'37 met with Dean Pitre on May 10 and interviewed 17 applicants, a good number of whom will receive some financial aid to enable them to attend the Institute this fall. There is hardly another activity of the Club which gives as much satisfaction as that of visiting with a group of well-educated youngsters. During the next fall, you Alumni should encourage good high school students to make application for admission, and at the same time notify any of the Honorary Secretaries of the applicant if it is felt that he or she would require aid.

Those who attended the last meeting signed the usual attendance cards but some forgot, and, therefore, a few may be listed as being there whereas all they did was ask for the reservation but did not appear. Our record included: F. W. Crosby '90, M. W. Rew'09, A. A. Gould'10, L. E. Wright'13, W. J. Winninghoff'14, E. N. Winslow'18, C. H. Reed'20, W. F. Clements'21, J. W. Gartland'21, W. G. Loesch '21, M. B. Bradley'22, G. P. Schumacker, Jr.,'22, F. H. Wood'22, E. L. Akerley'23, Lockwood Oliver'23, R. H. Smith'23, C. E. Herrstrom'24, D. E. Moore'24, G. F. Way,3d,'24, W. C. Sessions'26, H. P. Ferguson'27, Frank Massa'27, A. G. Hertzmark'29, T. R. Wigglesworth'30, D. S. Connelly'31, J. A. Hayes'33, R. H. Valentine'33, G. E. Merryweather'34, J. C. Rowe'32, J. F. Keithley'37, G. R. Young'37, F. W. Reuter, Jr.,'38, Bernard Zukerman'38, M. G. Magnuson, Jr.,'39, R. W. Cobean'40, N. R. Klivans'40, L. D. Fykse'41, L. C. Turnock, Jr.,'41, R. J. Fay'42, P. S. Shane'46, W. A. Reed'43, W. D. Bowman'44, E. T. Schoenwald'44, E. P. Klipfel'48, P. L. Nies'48, F. C. Turner,3d,'48, W. C. Caywood'49, V. R. Murphy, Jr.,'49, T. E. Weil'49, and K. A. Benjamin'50. – G. RICHARD YOUNG'37, *Secretary*, The Weatherhead Company, 300 East 131st Street, Cleveland, Ohio.

The M.I.T. Club of the Kanawha Valley

The Club held a dinner meeting for members and their wives at the Kanawha Hotel in Charleston, W.Va., on May 8. Chairman B. T. Woodruff'36 introduced the guests of honor: H. E. Lobdell'17, Executive Vice-president of the Alumni Association and Publisher of The Review; and D. P. Severance'38, Secretary and Treasurer of the Alumni Association and Circulation Manager of The Review. Both guests briefly reviewed items of current interest concerning activities at the Institute and those of the Alumni Association. This firsthand account of present-day activities evoked many questions and general discussions. W. L. Hawes'22 spoke in appreciation to the guests of honor.

The business part of the meeting resulted in the election of the following officers for the 1950–1951 season: Chairman, G. B. Bradshaw, Jr.,'40; Vice-chairman, R. G. Edmonds'34; Secretary-Treasurer, M. F. Means'45; Executive Committee members, R. L. Kelly, Jr.,'42 and J. P. Leinroth, Jr.,'48.

The meeting was attended by the following members, many of whom were accompanied by their wives: D. W. Barber '42, G. B. Bradshaw, Jr.,'40, William Brewster'98, S. J. Bugbee'27, D. B. Carmody'47, P. R. Des Jardins'38, R. G. Edmonds'34, R. D. Glenn'33, Richard Gorman, Jr.,'33, W. L. Hawes'22, M. E. Hitchcock'37, D. G. Hulett'42, J. C. Jefferds, Jr.,'40, J. P. Leinroth, Jr.,'48, M. F. Means'45, H. P. McJunkin'43, I. L. Murray'26, M. E. Sullivan'47, A. E. Winslow '47, B. T. Woodruff'36. – PAUL R. DES JARDINS'38, *Secretary*, Worthington Pump and Machinery Corporation, Post Office Box 281, Charleston 21, W.Va.

New Haven County M.I.T. Club

During the spring, the Club held two especially pleasant meetings; one at the Restaurant Institute of Connecticut in New Haven on March 16, and one at the Hotel Elton in Waterbury on April 27. At the former, Mrs. Frances L. Roth, Executive Secretary of the Assembly of Municipal Court Judges, as principal speaker, proved that "Lady Lawyers" can be extremely charming as well as witty. The lighting, the food and the table arrangements made our members sincerely hope that many of the boys in the Restaurant Institute settle nearby after graduation and practice diligently tomorrow what they seem to be learning so well today.

At the Hotel Elton, on April 27, our own Hud Hastings'07, Professor of Economics and Chairman of the Department of Industrial Administration at Yale University, acted as principal speaker. This is the fourth time Hud has talked formally to the Club. An increasing audience at each occasion shows how he has endeared himself to his fellow Alumni over the years.

The Alumni attending the April meeting were: John Bradley'07, Hudson B. Hastings'07, Claude T. Wilson'09, Harold Manning'12, Roy Parsell'14, Ralph Perry '14, C. L. Smith'14, Orton P. Camp'15, L. V. Clark'15, Forrest G. Purinton'15, John R. Freeman, Jr.,'16, Stuart Boyd'18, Joseph L. Hetzel'23, Donald C. Chase'26, Albert Libbey'26, Frank Nettleton'30, W. H. Towner'32, Albert I. Blank'37, Clifford Lytle'37, Walter Wojtczak'37, Ray D. Edwards, Jr.,'39, John H. Purinton '41, Richard Russell'42, K. Thomas Momose, 2-44, E. Loring Belcher, 6-46, David G. Black, Jr., 6-46. Unfortunately, the list of those attending the March meeting has been lost. – ALBERT P. LIBBEY'26, *Secretary*, Box 238, Stony Creek, Conn.

The M.I.T. Club of New York

A dinner meeting at the club quarters on May 3 was attended by approximately 100 members who thoroughly enjoyed themselves. Professor Otto Koppen'24 showed movies and slides of his new helioplane which has since been publicized nationally and made available to the public. Professor Koppen's droll humor balanced the "non-technical" technical explanations of how his helioplane can land and take off in one's driveway. In a question and answer period at the end of the program, he had to refuse two willing buyers by pleading that his price and delivery information was a little premature. President Sax Fletcher'18 presided at a business meeting of the Club at which the Nominating Committee's report was read by Chairman George Dandrow'22.

After George's eloquence, there were no other nominations and motions followed in rapid sequence electing the following officers: W. J. Littlefield'17, President; E. S. Burdell'20, Vice-president; I. D. Jakobson'21, Vice-president; D. D. Spoor'22, Vice-president; A. L. Bruneau, Jr.,'38, Treasurer; R. H. Legg '42, Assistant Treasurer; G. P. Grant, Jr., '35, Secretary. New directors elected were: A. J. Kemp'24, R. C. Wilts'41, E. H. Koontz'36, D. A. Wright'38, and J. E. Plantinga'45.

President Sax Fletcher thanked everyone for their co-operation in making the year a success and introduced his successor in office, Joe Littlefield, who promised to carry along, building on the foundations so ably set by George Dandrow and Sax Fletcher. – Don Taylor'35 is chairman of the steak-stein dinner scheduled for October. His committee is plan-

ning a "bigger and better" event than last year's record-breaker. – G. P. GRANT, JR., '35, *Secretary*, Grant Photo Products, Inc., 401 Broadway, New York, N.Y.

M.I.T. Club of Philadelphia

The spring dinner meeting was held this year at the Barclay Hotel on May 16. The guest speakers were George C. Kenney'11, General, United States Air Force, and John E. Burchard'23, M.I.T.'s Dean of Humanities. Dean Burchard opened the meeting with a lively talk on the general education program at Technology, and his audience was impressed with the continuing dynamic approach the Institute staff uses in maintaining its leading position in the academic world. General Kenney came up to Philadelphia in his wartime B-17 "flying office" from Maxwell Field, Ala., where he is commandant of the Air Force's Air University. His topic was "National Security." The General reviewed the current international situation and gave his listeners a number of sobering facts to think over. After his speech, General Kenney recounted some of his very interesting experiences as commandant of the Pacific Air Command. For more of the same, we highly recommend his book, *General Kenney Reports.*

The following Alumni and guests attended the meeting: Arnold S. Ackiss'30; Claude A. Anderson'05; Earl F. Anderton'32; A. Rufus Applegarth, Jr.,'35; Mark Aronson'16 and John J. Target, guest; Lawrence H. Bailey'15; Richard O. Bailey '15; William H., 3d, and Mrs. Bertolet'48; John E. Burchard'23; Frank S. and Mrs. Chaplin'32; J. Ernest D. and Mrs. Clarkson'21; Robert S. Cook'30; Wiley F. and Mrs. Corl, Jr.,'39; H. Stuart and Mrs. Dimmick'22; John L. Dodson'31; Robert C. Eddy'38; Robert G. Fisher'44; Patrick D. Goggin'43; Hans J. Haac'43; Edward J. Healy'23; Karl E. W. Hellsen'32; George C. Kenney'11; Archibald H. Kinghorn, Jr.,'20; John and Mrs. Lawrence'32 and Thomas H. McCartan and Stuart H. Smith, guests; George T. and Mrs. Logan '29; Robert A. Lombard'47; Kenneth S. Lord'26; Harold F. and Mrs. Marshall'19; Theodore A. McArn'21; J. Robert McCaa '32; Samuel K. and Mrs. McCauley'41; V. G. Miskjian'29 and B. H. Blair and H. Kline, guests; William C. Mitchell'49; Jack L. Mohr'47; Herbert R. Moody'41; Richard S. Mooney'47 and John Cook, J. Thomas Cooper'47, and David R. Wadleigh'38, guests; John W. Patton'30; Edwardes S. Petze'28; William W. and Mrs. Pleasants'33; Alexander S. Poskus'41; Edward W. Smith, Jr.,'42; C. Willis Stose'22; James S. Thornton'41; Robert C. van Ravenswaay'48; Willard E. and Mrs. Vaughan'26; Robert R. Wagstaff'37; Franklin E. Washburn'26 and B. W. Webb, guest; Robert W. and Mrs. Weeks '13; Whitney and Mrs. Weinrich'30; Proctor and Mrs. Wetherill'34; Charles B. and Mrs. Wooster'29; Robert E. and Mrs. Worden'36 and Clifford W. and Mrs. Risberg and Arthur L. and Mrs. Taylor, guests.

J. Howard Pew'03, Director and former President of the Sun Oil Company, received the Vermilye Medal for leadership in industrial management at recent ceremonies in the Franklin Institute. This award was established in 1937 to stimulate, encourage, and recognize outstanding contributions in the field of industrial management. – SAMUEL K. MCCAULEY '41, *Secretary*, 288 Copley Road, Upper Darby, Pa. *Assistant Secretaries:* WILEY F. CORL, JR.,'39, Box 532, Bryn Mawr, Pa.; PROCTOR WETHERILL'34, Rural Delivery, Chester Springs, Pa.

M.I.T. Club of St. Louis

Continuing an active program, the Club met on April 20 at the University Club. Approximately 60 Alumni came to hear Horace Ford make one of his last speeches as treasurer of the Institute. The Mid-Century Convocation movie was shown and Mr. Ford brought us up to date by telling us of the progress that has been made in expanding M.I.T.'s physical plant. Mr. Ford was careful, however, to point out that the Institute is not concerned solely with its plant and also mentioned the high caliber of students now attending Technology.

Gene Weil'21, President of the Club, introduced our principal speaker, and Homer Howes'20, Chairman of the local Development Program Committee, closed the meeting with a brief discussion concerning the committee's work which has been carried on over a period of a year and will continue for the next few months. The summer outing of the Club was planned for June 17. Frank Mesker'27 again generously offered the fine facilities of his home, overlooking the Missouri River, for this picnic. – JOHN E. TAYLOR '46, *Secretary*, Haynes and Koenig, 818 Olive Street, St. Louis 1, Mo.

M.I.T. Club of Schenectady

High light of club activities during the month of May was the dinner meeting held at the Edison Club on May 15. This meeting was part of the Development Program activity in this area and was arranged with the help of Donald H. Van Deusen'13, representative of the Development Program for the New York State region. Professor W. L. Campbell'15 was the featured speaker as part of the program to familiarize club members with recent developments at M.I.T. Professor Campbell presented a very interesting talk covering recent acquisitions of land and buildings along the Memorial Drive area. Buildings such as the new dormitory and the Charles Hayden Memorial Library were described to the audience, particularly regarding new facilities for student life on the campus.

The Institute's important part in co-operating with industry and other professions was emphasized with Professor Campbell's example of research and development in making insulin available for medical use. An interesting discussion and question period followed. At this meeting the colored movie of the Right Honorable Winston Churchill's speech at the M.I.T. Mid-Century Convocation was presented. Many familiar parts of the Institute were pictured in the movie presentation.

Those present were: C. F. Barrett, Jr., '34, G. T. Bevan'31, J. G. Booton, Jr.,'37, W. L. Campbell'15, C. D. Cillie'30, J. T. Coe'42, L. H. Dee'35, J. L. Fratus'36, L. J. Goldberg'26, A. P. Kellogg'24, G. M. Ketchum'41, J. H. MacLeod, Jr.,'41, J. P. Mills'33, L. G. Peterson'36, W. B. Rodeman'44, J. A. Serrie, Jr.,'46, D. P. Strang '45, D. H. Van Deusen'13, A. M. Varner '47, R. F. Zimpel'33. – W. B. RODEMAN '44, *Secretary*, General Electric Company, Building 81, Schenectady, N.Y.

M.I.T. Club of Southern California

During the past month, considerable progress has been made on the 1950 directory of the Club. Vic Stanley'44 has been appointed advertising manager and will be assisted by McDowell'45 and Lynes'49. Bud Golson'34, Directory Chairman, announced that MacCallum '24, whose contacts with other clubs will be of great value in bringing out the directory, has been added to the Directory Committee. Subscriptions, gifts and advertising for the directory are coming in at a satisfactory pace.

The directory will list Alumni by classes; which, believe it or not, go back to the '70's. It will also list the names of M.I.T. students who live in this area and will contain a sketch (similar to that adorning the April issue of the M.I.T. News Letter) by H. B. Kane'24, representative of our Club on the Alumni Council. All are urged to send in their subscriptions and personal news at once.

Work on the directory has brought forth many letters from Alumni who have not been in contact with the Club in the past. Among these is Annie G. Rockfellow'89 of Santa Barbara, who maintains she is probably the oldest alumna of the Institute in our region. Bertha Ogden'25 has become Mrs. John F. Rozenberg. Ford Sammis'22, expert market analyst, passes on the information that his wife, Constance Sharp Sammis'29, is now taking an extra degree at the University of California, Los Angeles branch.

Francis Morton'13, closely followed by Bob Welles'15 and Bill MacCallum'24, have volunteered as class secretaries for this area, but the Club could use many additional volunteers. – HIRAM E. BEEBE'10, *Secretary*, 1847 North Wilcox Avenue, Hollywood 28, Calif.

The M.I.T. Club of Western Pennslyvania

The Club held its regular monthly meeting at the University Club in Pittsburgh on April 19. After a pleasant hour of informal conversation and the stein, an excellent buffet dinner was served. At 8:00 P.M., the meeting was called to order by our President, George Hoffman '28. The minutes of the March meeting were read and approved. The treasurer's report was read by our Treasurer, Charlie Peck'41, and approved and new members were introduced. The members of the 1950 Nominating Committee were introduced.

At this meeting we had one of our own M.I.T. Alumni as speaker. M. A. Schultz '39 spoke to us on atomic energy and atomic power plants. To provide a background for his talk, and to illustrate the

basic principles of atomic fission, an Encyclopaedia Britannica film was shown. Mr. Schultz then explained why nuclear power plants are wanted. One of the first reasons is that only a very small amount of fuel is needed to produce a large amount of energy. Secondly, the nuclear form of energy does not have large amounts of ash. And finally, a tremendous amount of energy can be released in a small space. The disadvantages, or the problems yet to be satisfactorily solved, are the initial cost of atomic power plants and the danger to personnel operating these plants. Elaborate shields are employed at the present time and remote controls are used. The problems of controlling a nuclear power plant were mentioned. Slides schematically illustrating a nuclear power plant were shown, and the neutron density loop was explained. The extreme difficulty in obtaining materials to handle nuclear power, or for use in the construction of such a plant, were pointed out. While Mr. Schultz could not discuss all phases of nuclear power plants because of the restrictions placed on public discussion of such data, a most informative evening was had by all present, and Mr. Schultz presented a very interesting lecture.

The following members were present at this meeting: H. M. Baker'30, C. T. Barker'27, E. M. Barnes'23, E. L. Chappell'24, I. M. Cramer'47, W. M. Davidson'26, J. D. Eichenberg'49, H. H. Hall '14, H. C. Hoar'25, G. M. Hoffman'28, A. L. Klieves'01, R. G. Lafean'19, G. D. Lawrence'47, R. W. McKinley'40, G. C. Morrissette'35, R. N. Palmer'25, C. F. Peck, Jr.,'41, A. K. Redcay'34, W. F. Schaefer'48, M. A. Schultz'39, R. H. Shriver'29, P. R. Toolin'39, J. A. Tryon '24, R. C. Wellwood'33, J. R. Winterbottom'30.

The Club held its final meeting of the 1949–1950 season at the University Club in Pittsburgh on May 15. Members enjoyed another pleasant hour of informal conversation followed by a buffet dinner. At 8:30 P.M. the meeting was called to order by our President. The minutes of the April meeting were read and approved. Duke Lafean'19, chairman of the Nominating Committee reported on the meetings of this committee, and announced the slate of nominees for the several offices of this Club for the year 1950–1951. These nominations were, for the office of president, Henry Rockwood '32, and for the three members of the board of governors (to serve for three years), G. A. Morrison'09, E. L. Chappell'24, and C. F. Peck'41. A vote was taken and all the nominees were elected.

The next meeting of this Club will be held in September. During the summer, the board of governors, the old officers, and the new officers will plan this meeting, and announcements will be mailed to all members. George Hoffman, as retiring president, thanked all for the support he had received, and wished Henry Rockwood well. Rusty Toolin'39, our entertainment chairman, introduced the speaker, James Tze-chien Liu of the history department of the University of Pittsburgh. Mr. Liu was born in China, and worked with the Chinese underground during this last war. He has just finished his thesis for his Ph.D. and will go to Yale next year to teach. Mr. Liu spoke of the internal conditions in China. Russia has played "power politics" and has taken full advantage of the depressed groups. In 1937 a "Popular Front" was established. Russia began giving China help in the war against Japan as early as 1937. This tended to increase the Russian prestige in China while United States prestige went down. Mr. Liu indicated that a new policy is needed and that it must recognize that southeastern Asia needs rebuilding, physically and culturally. The speech was concluded at ten o'clock, and the discussion and questions lasted until nearly eleven.

The following members were present: M. A. Akel'46, C. T. Barker'27, W. J. Bates'35, E. L. Chappell'24, E. J. Cole, Jr.,'44, D. W. Dimock'28, V. J. Dobert '36, H. E. Heiligenthal'34, W. C. L. Hemeon'26, R. D. Hoak'28, G. M. Hoffman '28, L. K. Johnson'43, Herbert Kay'47, W. C. King'48, R. G. Lafean'19, Raymond Mancha'26, S. D. Miller'32, G. A. Morrison'09, G. C. Morrissette'35, Aaron Redcay'34, W. F. Schaefer'48, E. A. Soars'21. P. R. Toolin'39, R. C. Wellwood '33. — GEORGE C. MORRISSETTE'35, *Secretary*, 469 Mapleton Avenue, Mt. Lebanon, Pittsburgh 28, Pa.

CLASS NOTES

• 1886 •

May 5, 1950 – The May Review has just come, and, as usual, I turned to class notes to see what the Secretary of '86 could have found to write about back in March, not having had any interesting information from the class membership to broadcast to the others. The age-old subject of finance and the low state of his finances seems to be worrying the Secretary over-much. If the membership won't help him by writing something to put in The Review and won't send him any "spondulics" to assist his mental processes so he can "imagine" something to write about, the simplest thing for him would be to "lie right down and die!" Let's look over The Review, however, and see if somebody has written an article that may arouse some thoughts in a vacant mind. The article on Edward Weston and the date 1888 start memories. 'Twas in 1888 that the Secretary, suffering from weak eyes, left M.I.T. and went to Newark to the Weston Electric Company to get practical work instead of so much eye work. Of course, Mr. Weston could not have known that a future Secretary of M.I.T.'86 was working for his company assembling dynamos, therefore the two never met. More's the pity! Then after several months of this work he was transferred to the laboratory for the arc light department and put in charge of the Wheatstone's bridge for testing the amount of wire on the magnets which operated the lamps. But the New Jersey mosquitoes proved to be no respecters of persons and after a year of Newark, he transferred to West Lynn and the fellowship of other Technology men in the Thompson Houston Electric Company. Among these were William H. Blood and Russell Robb of '88, Hollon Spaulding'87 and others. These men were beginning to use the new Weston Electric Company portable volt meters and ammeters, beautiful instruments with levelers, mirrors and knife-edged pointers, but these early ones were without insulated binding posts. I well remember Blood's look of surprise when he accidentally touched both of the binding posts on the 500-volt direct-reading volt meter as he was showing it to me, and barely prevented if from crashing on the floor. Well, enough of that!

My plaintive cry in the May notes has not fallen entirely on deaf ears, for within a few days I have had word from Mackintosh, Low, and the ever-faithful Duff. Mack is in serious trouble! He has never been christened and he wishes his name were *Peter*. He has learned that one of his four-great-grandfathers was a blacksmith in 1773 with a shop in Boston where the Boston Tea Party operators assembled, disguised themselves as Indians, and proceeded to the dock where they unloaded the cargo of the tea ship into the harbor. Peter Mackintosh was also one of the founders of the Massachusetts Charitable Mechanics Association of Boston which owns the Huntington Avenue building where for many years frequent exhibits of New England manufacturers were held and where the Horticultural Society holds its annual flower show. He asks, "Would you recommend that I arrange to be examined, accepted, and christened so as to be registered as such in our Department of Vital Statistics." Poor man! Of course, he will be eternally damned, and it won't make a pennyworth of difference whether it be as Frederick or Peter. Any member of '86 in a position to advise him can write to him at 1025 Gilespie Street, Schenectady, N.Y., and possibly set his mind at rest.

Wilson Low writes from Sheridan, Wyo., under date of May 14, that he has just returned from California where he has been spending the winter months. He speaks of a very pleasant reception by members of the Santa Clara chemists who presented him with a big cake emblazoned with his name and "Class of '86" on the top. He spent most of his time in Saratoga, some 48 miles south of San Francisco, said to possess one of the two most equitable climates in the world. He played nine holes of golf every other day. He promises more details later. He noticed my call for unpaid dues and asks to be told if he is delinquent. Don't be troubled, Wilson, you're among the Elect!

The Secretary has recently received a letter from Maurice H. Howe, son of B. M. Howe, S.M.A. '86, who died in December, 1949, as previously reported. This letter, written from his Vallejo, Calif., residence, was in answer to my request for information concerning his father during his later years. In the Class History of the members of S.M.A. '86, published in 1944 by the late Charles H.

Herrick, Secretary of that S.M.A. group, Mr. Howe's life up to that time is quite fully set forth, as all the S.M.A. '86 men are fully aware. Mr. Howe's wife died in May, 1945, leaving a huge vacancy in his life which the son and his twin sister tried to fill to the best of their power. Howe, Sr., retired from active business in 1938, but kept his interest alive in the Elks and Eagles, having been a member of the Santa Barbara Lodge of Elks for 45 years. He was hoping to revisit M.I.T. in 1950 or 1951, but his death has made that impossible. His last trip east was made in 1921-1922. Oil was his chief interest in a business way, and he had filled all positions in the industry and numbered among his friends many of the early California oilmen. One of his pleasures was to revisit the old oil wells where he had worked.

Our treasury consists of a few post cards and three cents in stamps! Would those delinquent members please pay up their arrears sometime before August 20, 1950? If uncertain, send along $1 anyway. — ARTHUR T. CHASE, *Secretary*, Post Office Box 4, Island Creek, Mass.

• 1887 •

Thanks to Arthur T. Chase,'86 Class Secretary, we are able to report on the condition of Major George F. Sever, our '87 classmate. Chase, as a neighbor, sees him occasionally. "He had been unable for some time to get down from his room at Plymouth where he was living as a guest in a nursing home and more recently was removed to the Jordon Hospital in Plymouth for an examination. The examination revealed that his right leg was in such a condition that an amputation was necessary, and the operation was very successful. He is now returned to his former quarters in the aforesaid nursing home across the street where he expects to spend the remainder of his days. I am informed that the doctors do not advise that he use crutches or have an artificial leg and, so, will probably be confined to his bed and chair." Eight years ago, in 1942, the Class held its 55th reunion at Plymouth. It was a three-day affair and we expected to have Sever with us at that time. But his house in Kingston was closed and his neighbors reported that he had gone to a hospital or it might have been a nursing home. Since that time, five of our Class that were at Plymouth have passed away; but as an invalid, Major Sever seems to have set a long-time record. — LONSDALE GREEN, *Secretary*, Hayes Hotel, 64th and University Avenue, Woodlawn, Chicago 37, Ill.

• 1888 •

The 62d reunion of the Class was held at the Union Club in Boston on May 10 with George Hamblet as our host. We met at noon, and after a pleasant hour together, luncheon was served at one o'clock. Seven of our classmates were on hand: Bates, Ellis, Faunce, Hamblet, Pool, Runkle and Sweetland. We were especially happy to greet Fred Ellis, always a loyal stand-by at all class affairs, as only a few weeks before he was on the danger list at a Cambridge hospital with a combination of heart attack and pneumonia. That he pulled through so quickly was a great satisfaction to us all.

We had another very pleasant surprise in having George Pool at his first class reunion in all these 62 years! As a lifelong resident of Boston, how he happened to choose the 62d rather than perhaps the 70th or 75th, we forgot to ask him; but like the prodigal son, he was most warmly welcomed. I am sure he was as much pleased as we were at this new experience for he promised to come again next year when Ralph Sweetland has kindly offered to be our host at the Algonquin Club.

Two of our classmates, Frank Cheney and William Atkinson, have died since our last meeting. We all stood in silence for a few moments in their memory. The sad news of the death of our beloved Class President, Ned Webster, on that very morning, did not reach us during the reunion. We shall miss him greatly. We shall not attempt here to speak of the remarkable career and great accomplishments of Edwin Sibley Webster, as that has been covered elsewhere, but only to express for all the members of the Class their deep sorrow and sense of loss in the passing of a generous friend, distinguished classmate and beloved president. — JOHN C. RUNKLE, *Secretary*, 49 Federal Street, Boston 7, Mass.

(As these notes go to press, word reaches The Review of the death of John C. Runkle on June 1.—Ed.)

• 1890 •

Franklin White, after many years' practice as a physician in Boston, during which he received the highest award that the American Gastroenterological Society can give, has retired and moved to 136 Middlesex Road, Chestnut Hill, Mass. William P. Flint's address, from May 1, is Post Office Box 66, West Chester, Pa. Frank Greenlaw is back from a two months' trip around South America, in the course of which he crossed the Andes three times. He was more impressed, apparently, by the tremendous growth of São Paulo which he says has reached a population of 900,000. A new crossroad was needed through the center of the city; and to get it, a series of business blocks were taken over in which all the buildings were demolished and an eight lane highway, with parking area underground and parking spaces for local business alongside, was built in their place. This is the industrial capital and coffee center of Brazil.

The Secretary recently took a drive about eastern Massachusetts and called on three of our members who have not appeared at the class reunions. He found Henry Nash out with a crowbar and pick replacing a 100-pound boulder that a truck had knocked out of position. Nash was with us for approximately two years in Course I and then went with the Bethlehem Steel Company, staying with them for 30 years. He was also in charge of the dry docks for the Boston Port, keeping them in repair. He lives on what he says is the oldest road in the country, which was the trail from the Plymouth plantation to Boston and wound around just high enough for the streams so that it crossed them where they could be forded. He had a very interesting garden and gave us a plant with quite unusual blue flowers and spotted leaves, the name of which we have not been able to determine. He is much disturbed by the number of small houses that are now being built in his vicinity.

Adelaide Sherman, who married a '91 man named Edward Blackmer, is living approximately a mile south of Plymouth in an attractive location overlooking the harbor. They retired from business about 27 years ago and picked out this spot as the most desirable place they could find. They, too, are disturbed by the advance of modern civilization as a new "high-speed" road is being built within 150 feet of their home, and the state is taking seven acres of their land. — In Attleboro, we found Karl Hyde, who also was with us for two years in Course I but left when he was offered a position with the Boston and Providence Railroad assisting in the rebuilding of all their bridges. After a few years with them, he became city engineer of Nashua, N.H. He left there to join a Boston engineering group which had an engineering plant in Attleboro. Later, they took over an ice company there and added a coal business to it; all of which he bought out. He has gradually dropped the engineering end of the business. All of these classmates seem hale and hardy. — GEORGE A. PACKARD, *Secretary*, 53 State Street, Boston 9, Mass. CHARLES W. SHERMAN, *Assistant Secretary*, 16 Myrtle Street, Belmont 78, Mass.

• 1893 •

Fred L. Varney died in South Portland, Maine, on February 28. He was a graduate of the Lynn High School and was registered as a member of our Class for three years in Course IX. From 1898 to 1903, he was associated with his father in the shoe business in Lynn. Since that time, he had been active in the banking business in Portland and Chicago. He was a founder of the Federal Loan and Building Association in Portland and at one time was assistant cashier of the Northern Trust Company in Chicago. — FREDERIC H. KEYES, *Secretary*, Room 5-213, M.I.T., Cambridge 39, Mass. GEORGE B. GLIDDEN, *Assistant Secretary*, 38 Chauncey Street, Boston 11, Mass.

• 1894 •

Members of the Class and probably many others would get quite a "kick" out of an article that appeared in the Boston Sunday *Globe* in March which somewhat inaccurately referred to our George Owen as a "Dean Emeritus of the M.I.T. Architectural School," but more accurately characterized him as the head of a clan of remarkable athletes. Of course, we all remember that George was some athlete in his own right back in the early days, but we take more pride in his professional success as a yacht designer and skipper and as a successful professor of Naval Architecture at the Institute for many years. Then the inexorable age-retirement rule put him on the emeritus list, along with three other '94 men, Harry Gardner in Architecture, George Haven in Mechanical Engineering and the hum-

ble Secretary in Industrial Biology, or what is now known as Food Technology. All four of this quartet are still active in business or professional ways, which proves that a man is not "through" when he reaches the three score and ten milestone.

To revert to Owen and the article mentioned, its purport was to call attention to the athletic prowess exhibited by three generations of George Owens. George, Sr., we know. George, Jr., was one of the greatest football and hockey players that ever represented Harvard in these sports. If the Secretary remembers correctly, he won his "H" in four sports and became famous. Now it seems that George, 3d, is holding up the family tradition as one of the greats. This time not at Technology or at Harvard but at Williams; where, according to this article, he is one of the greatest baseball players in the history of that college and is or has been a "prospect" for the Boston Braves. At least he has had the best of coaching from dad and granddad and if we see him operating at Braves Field this year, our George deserves a part of the credit for his training.

In a totally different field another of our '94 men is in the public eye. The Manchester *Evening Leader* for May 13 published a picture of Norwin Bean selling the first bond of the United States Savings Bond Independence drive in New Hampshire to the mayor of that industrial city for his young son. Bean is a high official of both the Manchester National Bank and the Manchester Savings Bank. He has had a distinguished career in his field and is probably as highly regarded as any banking man in the state. We would say that for judgment, ability and personality, he is unrivalled. His class and his state are proud of him, and being a granite stater as well as the class secretary, this is official. For as it happens, the Secretary is president of the Benjamin Chase Company of Derry, N.H., although his son, Sam Prescott of M.I.T.'33, is treasurer and general manger and does all the executive work.

Joseph H. Kimball is now living at 13 Eton Place, New Britain, Conn. We have recorded in years past his excellent service as an engineer in the great T.V.A. project in Tennessee, and it is pleasant to know that his retirement is to New England. Joe was a Newburyporter in his days at the Institute and commuted daily from that city, as was common with Technology men from there 60 years ago. Joe's daughter has a very responsible position in the school system in New Britain. — Milton M. Wheeler is back, after some years in Sarasota, Fla., at his old address in Central City, Ky. Some of the old Course I boys may wish to contact him there. His mail address is Post Office Box 286. Doubtless, he would be glad to hear from some of his old friends.

The Secretary is happy to report that Alan Claflin, after a "vacation" in the Deaconess Hospital and an operation which seemed advisable but not critical, is now enjoying his convalescence at his home in Winchester. Alan says business was a little quiet so he thought he would take a new type of vacation. The Secretary visited him twice during his stay in the hospital and found him as full of quips and whimsical philosophy as ever. A telephone conversation just before writing these notes induces the opinion that he now feels young enough to look forward to a score more years of busy life. We never could think of him as old, anyway, for his attitude to life is always one of high humor, hope and the doing of new and interesting things.

The Secretary has just completed the writing of the history of Technology in Boston; that is, from the days of Rogers' great conception of a new type of education through the years of the "Tech on Boylston Street" to the removal of the Institute to Cambridge in 1916. It was a distinct era in the life of M.I.T.; and in its writing, the more than quarter century from 1890 to 1916 has in a way been relived by the writer. The Technology Press has agreed to publish this work, which will probably be approximately 300 pages in extent, and a good demand is hoped for as all profits go to M.I.T.

The Secretary has just attended the Decennial Conference of the Institute of Food Technologists in Chicago. As the reputed founder of this organization, which is now more than national in scope and has over 3,000 members, he received many kindly attentions. It all began at M.I.T. with 22 Founder members. Now there are 20 regional sections from coast to coast in North America and members in many countries. — SAMUEL C. PRESCOTT, *Secretary*, Room 5-213, M.I.T., Cambridge 39, Mass.

• 1896 •

These are the last class notes for the present school year. Your Secretaries send greetings and best wishes for a well-earned vacation season which should be enjoyed with greater leisure and with a sense of well-earned relaxation. We wish to extend our appreciation of the co-operation which some of you offered to us in making these notes possible and adding much real interest for our readers. Along these lines, we have had another welcome letter from Joe Stickney, 3025 North Meridian Street, Indianapolis 8, Ind.:

"Thanks for your compliance with my previous request for change of address for The Review, the May number of which arrived yesterday. I read it with a great deal of interest, particularly your excellent column about '96 men or, at least, what is left of us. One feature of these notes was conspicuous for its human interest. In the notes of the more recent classes, the prevailing topic is marriage and children, while we like to talk about our ills and what we are doing about them. History repeats itself. I am no exception for, as previously reported, I have both legs amputated above the knees and am confined to a wheel chair at home; but I have a good appetite and sleep well and, on the whole, am not too unhappy. But enough of that sort of thing. Let's talk of something cheerful.

"It is evident that you are anxious for interesting recitals of incidents in our careers. I have had one and this letterhead identifies it. (The letterhead is the Indianapolis Athletic Club, J.A.R.) It has a sizable building with nine stories above ground and three below and is equipped with all the facilities a modern social and athletic club should have including three floors of dormitory rooms both for permanent and transient occupancy. It was first opened in January of 1924 and I was one of the 2,000 original members; but I took little interest in it, except for my own amusement, until 1930 when I became chairman of the House Committee. Two years later, I was elected president for nobody else was willing to take it in the midst of the depression. For the same reason, I was continued in office. We had a hectic time for a few years with the membership down to 800 and a tremendous indebtedness; but, ultimately, we got it going in the other direction. Today, we have paid off the indebtedness, we have bought the ground, we have rehabilitated the building and its furnishings and have a closed membership of 3,000 and a long waiting list. This is not bragging nor does it ignore the help of a great many other members who stuck with it. But like other '96 men, there has to be an end. It simply provides a background for another piece of mail that you will receive under separate cover that describes the end. I hope you will enjoy it for it supplies the unusual incident in my career."

The "other piece of mail" was duly received and turned out to be a tear sheet from *Indac*, publication of the Indianapolis Athletic Club, Inc., telling about Joe's election as president emeritus of the Indianapolis Athletic Club. The following resolution was unanimously adopted by the Board of Directors of the club at a meeting held on February 27: "WHEREAS: Joseph W. Stickney has served as President of the club for eighteen years; and WHEREAS: He has rendered efficient and active service, giving much of his time and energy to the club's operation, and being responsible, in a very large measure, for the success the club is now enjoying; and WHEREAS: His present disability has caused his retirement from the Presidency; NOW THEREFORE, BE IT RESOLVED, that the Board of Directors and members of the club express their appreciation for his faithful administration of the office of President, and in gratitude Joseph W. Stickney is hereby elected to President Emeritus of the Indianapolis Athletic Club."

There is no new announcement other than the continuation in our effort to increase the fund for the future needs of our alma mater. The Review, of course, supplies much material of general interest and should be read closely with a view to making us thoroughly acquainted with the general program that the Fund Committee is launching. — Two changes of address have been received: Hiram B. Hartwell, 99 Day Street, Norwood, Mass.; Walter S. Leland, Walter S. Leland Company, Inc., 6613 Hollis Street, Emeryville 8, Calif. — With regret, the Secretaries must report that Nathan H. Daniels, whose address was 326 Page Road, Bedford, Mass., died on March 2.

The pulse of our local boys is running evenly and strong, with the expected weaker links in the chain holding up bet-

ter than anticipated. – JOHN A. ROCKWELL, *Secretary*, 24 Garden Street, Cambridge 38, Mass. FREDERICK W. DAMON, *Assistant Secretary*, 275 Broadway, Arlington 74, Mass.

• 1898 •

In the March class notes, we suggested than our classmate, Professor C.-E. A. Winslow, tell us about his honors and activities. Hardly had the copy gone to the press, when through the courtesy of the Alumni Association Office, we began to receive clippings on the subject. In 1942, Dr. Winslow received the Sedgwick Memorial Medal of the American Public Health Association; in January, 1949, the F. Paul Anderson Medal of the American Society of Heating and Ventilating Engineers; and, in April, 1949, the Lemuel Shattuck Award of the Massachusetts Public Health Association. How many more medals and awards our distinguished and modest classmate may have received, we cannot state. The clippings that follow describe two of these honors and aspects of his professional career.

The *Journal-Courier* of New Haven, Conn., in its issue of January 19, 1950, printed as follows: "Dr. C.-E. A. Winslow, editor of the *American Journal of Public Health* and professor emeritus of public health at the Yale School of Medicine, has been selected as the 1949 recipient of the F. Paul Anderson medal of the American Society of Heating and Ventilating Engineers for 'outstanding contributions in the field of heating, ventilating and air conditioning.' The award will be presented to Dr. Winslow, a past president of ASHVE, at a banquet on Jan. 25 during the society's 56th annual meeting in Dallas, Tex. The award was established in 1930 by the late Thornton Lewis of Philadelphia, also a past president of the society, and is presented to ASHVE members in recognition of notable scientific achievement or outstanding services in the heating, ventilating and air conditioning field. Since 1932 seven awards have been made. Formerly director of the John B. Pierce Laboratory of Hygiene here, 1932-48, and past president of the American Public Health Association, Dr. Winslow is the author of numerous papers appearing in medical and health journals and other scientific publications and has written several books on ventilation, public health and housing. He is well known for his work in defining the physiological problems in the field of the heating, ventilating and air conditioning and in directing joint research of the physiologist and engineer. He is the co-author with L. P. Herrington, director of the Pierce Laboratory, of a book 'Temperature and Human Life,' published last year. Dr. Winslow was born Feb. 4, 1877, in Boston. He is a graduate of . . . Technology, where he taught in the department of biology and public health from 1898 to 1910. He then became associate professor of biology at the College of the City of New York until 1915. . . ."

The Sunday *Republican* of Springfield, Mass., in its issue of April 23, 1950, contains the following article: "The newly-created 'Lemuel Shattuck Award' for distinguished service by a New Englander in promoting the public health will be conferred for the first time at the 60th Anniversary meeting of the Massachusetts Public Health Association at Boston University on . . . April 25. The award will be given to a native of Boston, Charles-Edward Amory Winslow, professor-emeritus of public health, Yale University Medical School, and Editor of the *American Journal of Public Health* (since 1944). Prof. Winslow received his bachelor's and master's degrees from . . . Technology and a doctor of public health degree from New York University in 1918. He received an honorary master's degree from Yale in 1915. An outstanding public health personality, he has served as Lauder professor of Public Health of the Yale School of Medicine from 1915 to 1945; Cutter lecturer at Harvard, 1928; Hayne Memorial lecturer, 1929; curator of public health, American Museum Natural History from 1910 to 1923; chairman of the New York Commission on ventilation from 1913 to 1923; director of health activities, League of Red Cross Societies, Geneva, 1921; expert assessor, health committee, League of Nations from 1927 to 1932; science director of the international health division of Rockefeller Foundation, 1929–30; vice-chairman of the committee on costs of medical care since 1927; and on the National Advisory Health Council. He also has served as president of the American Public Health Association, Society of Heating and Ventilating Engineers, and the Society of Bacteriologists."

The members of the Class have received a letter concerning the progress of the Gravity Research Foundation. As some may have mislaid the letter, and the subject is of general interest outside the Class, especially the awards for essays on gravity, we are including this communication in the class notes. This will also serve as a permanent record. The letter is as follows: "Your classmate, Roger W. Babson, has asked me to write you because his interest in gravity came up at your 50th reunion. There are three things to report to you: 1. We are now incorporated and have had an office at New Boston, N.H., since June, 1949. 2. You may be passing through New Boston on your vacation next summer; if so, be sure to visit us. 3. We are sending you the enclosed poster as you may have some acquaintances who would like to compete for one of the awards. If anything concerning gravity comes to your attention, we shall be grateful if you will send it to us. Sincerely yours, George M. Rideout, President."

Enclosed in the letter was the following notice: "Awards for Essays on Gravity. Instead of Three Awards, as in 1949, we are now offering Seven Awards for short Essays with the following four stipulations: (1) These Seven Awards will be made by us on December 1, 1950, for the best 2000 word essays on the possibilities of discovering some partial insulator, reflector or absorber of gravity. (2) The First Award will be $1000.00. The Second Award will be $300.00. The Third Award will be $200.00. The Fourth Award will be $150.00. There will also be three $100.00 Awards. (3) Essays must be received at this office before October 15, 1950. They will be accepted from anyone who is seriously interested in the application of gravity to practical uses for the benefit of humanity. (4) The decision of the Trustees will be final and all essays will become the property of the Foundation. Address: Gravity Research Foundation, New Boston, N.H., George M. Rideout, President. (The essay may be less than 2000 words; but if more the judges have the right not to accept same.)"

Our Swampscott neighbors, Mr. and Mrs. Abram French and daughter, Isabel, called on us the other evening at our home in Marblehead. We spent a pleasant hour reminiscing about early student days and friends at M.I.T., the Golden Anniversary and discussing local affairs. Our classmate is still active in the contracting business; Mrs. French is interested in municipal and church affairs; and daughter, Isabel, a graduate of Tri State College, is interested in electronics and is employed by the Sylvania Electrical Products, Inc., of Boston, and pursuing graduate work at Boston University. – The Secretary and his sister attended the dedication of the Charles Hayden Memorial Library on May 19, and were greatly inspired and edified. It is necessary to inspect this edifice to appreciate it. In truth, alma mater is on the march toward high and fine objectives.

We have received a picture post card from Vice-president Bodwell, showing a section of the golf course, La Jolla, Calif. Very attractive. This, we take it, is your home course, Howard. We quote, in part, from Howard's message: "We had a visit from Van Lansingh the other day. He was out here on business at their mines. He looks very well and full of vim and vigor as ever. I was certainly glad to see him." Thanks for the card, Howard, and also for your kind personal words. – Speaking of Van Lansingh, you have all received long ere this the latest presidential letter (number four). Thanks, Van, for the letter and to those who have sent in material for class notes and to Dan Edgerly for his interesting write-up about M.I.T. Co-operation like this makes the world go round and enriches the '98 class life.

Our world-traveling classmate, George Cottle, sailed from New York on April 13 by the Khedival Line for Istanbul. Stops were planned for Genoa, Naples, Cairo – with a trip by moonlight to the Pyramids – and Beirut. From Istanbul, George planned to go to Teheran, Persia – possibly farther afield – returning by plane to Holland, then on to London and home sometime in June. George Cottle is active on the Committee for Financing Development. Before he sailed, in co-operation with other members of the committee, he drafted a letter, which you have all received. In the class notes for February, we discussed the relationship of the Class to the development project. A Class Agent letter was mentioned, which was withheld in accordance with the program of the Committee for Financing Development. The letter from George elaborates in detail how the Class can get behind this great effort to fund M.I.T.'s independence.

Through the courtesy of the Alumni Association Office, we have received recently news of the passing of several classmates: Frank E. Coombs of Los Angeles, Calif., on September 9, 1948; Frederick Kleinschmidt in April, 1949; and Henry R. Robinson of Richmond, Ind., on January 24, 1950. Mrs. H. Van Blarcom of Teaneck, N.J., has also kindly written us, advising of the passing of Mrs. E. F. Kimball in February, 1949. Dr. and Mrs. Kimball were with us at the Golden Anniversary. We regret that we can give at present no further information than these bare notices, but trust that relatives or friends may yet furnish write-ups for the class notes similar to those kindly sent to us by Mrs. Philbrick and Mrs. Lambert concerning their husbands and families. We can still hear Frank Coombs singing in the Glee Club and leading, "The Happy Hottentots" in the architectural drawing room in old Engineering 3, but what about his career? And the same question applies to other deceased classmates about whose careers we would like to receive write-ups for the class notes.

Also through the courtesy of the Alumni Association Office, we have received many new addresses. Classmates, kindly correct your directories accordingly. George R. Anthony, 2 North Broadmoor Boulevard, Springfield, Ohio. George H. Booth, 223 Ximeno Avenue, Long Beach 3, Calif. Percy A. Campbell, in care of Robert V. Campbell, 229 Signal Road, Drexel Hill, Pa. Henry H. Clark, 2432 Kenilworth Road, Cleveland Heights 6, Ohio. Walter A. Cleaveland, 5408 Sylmar Avenue, Van Nuys, Calif. Albert J. Fearing, 108 Van Guilder Avenue, New Rochelle, N.Y. James E. Hazeltine, 33 North State Street, Rural Delivery 2, Warren, Pa. Mrs. Pliny B. Morrill, 347 Waban Avenue, Waban 68, Mass. Frank I. Peckham, 378 Kenwood Avenue, Delmar, N.Y. George B. Southworth, Income Funds Room 520, 152 Temple Street, New Haven, Conn. John D. Underwood, Post Office Box 287, La Jolla, Calif. — Would it not be a good idea for classmates, when they change their residence to send in a little descriptive material for the class notes?—Edward S. Chapin, *Secretary*, 463 Commercial Street, Boston 13, Mass. Joseph C. Riley, *Assistant Secretary*, 9 Pond View Avenue, Jamaica Plain 30, Mass.

• 1899 •

From the New York *Times* of April 14 comes the sad news that Mrs. Caroline E. Moulton Newell, wife of William Stark Newell, President of the Bath Iron Works Corporation of Bath, Maine, passed away at her home on that day. The deepest sympathy of all his classmates goes out to Stark in his bereavement. Those of us fortunate enough to have met Mrs. Newell at the class reunion last June remember her graciousness. Mrs. Newell was a native of Bath and was active in many lines. She had served as director of the Pine Tree Society for Crippled Children and Adults and as a trustee of the State Military and Naval Children's Home and of the Bath Memorial Hospital.

A son was born to Leighton R. Rickards'33 and his wife on May 2. With the two older granddaughters, your Secretary finds life very interesting when he visits their home at Roslyn Heights, Long Island. — A certificate was awarded to all members of the Massachusetts Public Health Association who had belonged to the organization 25 years or more on the 60th anniversary of the founding of the Association on April 25. The member with the longest record was Charles-Edward A. Winslow'98 with 50 years to his credit. The next longest record was held by Burt R. Rickards who joined 47 years ago.

Your Secretary doesn't like to fill this column with notes about himself; and won't, if you fellows will cease being so lazy, recalcitrant, or modest, or whatever the cause may be, and will send in news about yourself or other classmates. Some do, but very few. Just give us the bare facts and we'll do the rest. — Burt R. Rickards, *Secretary*, 381 State Street, Albany, N.Y. Miles S. Richmond, *Assistant Secretary*, 201 Devonshire Street, Boston 10, Mass.

• 1904 •

The only outstanding news regarding '04 men since the last edition of these notes was written is the retirement of General Richard K. Hale from his position with the Massachusetts Department of Public Works. Various papers took note of his career and long accounts appeared in Boston and New Bedford papers. Dick graduated from Harvard in 1902 and topped his education with two years at M.I.T. Aside from his prominence as an engineer, he has given notable service to the Massachusetts National Guard, hence his title. Space will not permit inclusion in these notes of all the nice things which have been said and done to mark Dick's retirement. Among other things he was elected an honorary member of the Boston Society of Civil Engineers.

The following quotation from the New Bedford *Standard-Times* of March 19, gives a few other items of interest: "A seemingly bottomless mass of aerial photos, engineering maps and waterway charts covered large working tables in the office of General Richard K. Hale, director of the Division of Waterways, State Department of Public Works, as the genial official made preparations for his last day of duty with the division. After 30 years of State service, 12 of them as head of the State organization devoted to improvement of docking facilities and harboring in Massachusetts, General Hale officially retired to private life last Thursday, the day before his 70th birthday.

"A Brookline resident and Dennis Summer visitor, the retired Army officer and State official remained active during his final days in office, conferring frequently, even during an interview, with office personnel seeking his advice or decisions on important projects. The State's first waterways director had stored away a wealth of knowledge and information on the Commonwealth's seaport system since 1938 when he was named director 'because they needed someone to fight for waterways.' With an engineering record antedating his appointment to the key position by many years, General Hale has played a major role in development of harbors in Massachusetts during a period when the greater portion of the Public Works Department interest — and funds — was devoted to highway construction and improvement. 'It was always difficult to secure funds during those early days when the Waterways Division first was established,' General Hale recalled on the eve of his retirement. He smiled as he added, 'and there always has been a good deal of pressure brought to bear on requests for projects not directly connected with highways.'

"As head of an organization built up over a period of more than 100 years by mergers of various State agencies, the affable official has seen the port of Boston grow during his years of service with the division. Changes in State administration brought some changes in the form of new administrators both for the Department of Public Works, under which his agency operates, and for the Waterways Division. But 'nothing too serious,' General Hale smiled. 'A good rest, relaxation and some real enjoyment' are the immediate prospects of the hard-working official who said that while his plans for the future remain indefinite, he plans to 'take it easy.' He is married to Mrs. Mary (Dean) Hale and they have two children, Mary D. Hale of Boston and Joanna M. Hale of Brookline."

Aside from the above there is little class news. Harry Rollins reports that he and Mrs. Rollins attended an alumni dinner in Los Angeles on January 12, at which President Killian was the principal speaker, and that Severy was also present. The Haywards and Anthonys had an impromptu lunch at the Toll House in Whitman recently and recalled the pleasant class reunion a year ago. — They can't get along without Art Langley in Connecticut. After retiring from the State Highway Department, he was appointed appraiser for the Veterans' Administration. — If you hear of things going wrong with the Boston and Maine Railroad, it may be ascribed to the retirement of Gus Munster from his job as vice-president in charge of purchasing which is imminent.

Although he retired from the lamp division of Westinghouse some time ago, Henry Richardson is in demand as a consultant and is being kept busy on various projects. A note from him encloses reprints of three papers he has published: "Burners for Lamp Working"; "Radiant Heating in Glassworking Production and Equipment"; "Gas Change May Require Unusual Skill to Effect Efficient Utilization." The latter paper is the first in a series of three. The following papers are "Lab Burners Need Special Attention when Gas Change Over Occurs" and "Problems Presented by Ceramic Burners When Converting to Natural Gas." As the use of natural gas spreads into the northeastern part of the country, it is not surprising that a man familiar with the problems of change-over is in demand as a consultant.

The alumni office reports the death of two classmates, William A. Hyde on April 27 in Worcester, Mass., and Freeman A. Cobb on April 12 in Wilmington, Del. Cobb was present at the class reunion last June. — Eugene H. Russell, Jr., 82

Devonshire Street, Boston 9, Mass. CARLE R. HAYWARD, Room 8-109, M.I.T., Cambridge 39, Mass.

• 1906 •

At a meeting of the American Society for Testing Materials' Textile Committee D-13, on March 15 to 17 inclusive, at the Park Sheraton Hotel, New York City, a special luncheon was held in honor of Professor Herbert J. Ball, II, marking his retirement as chairman of this committee after 20 years of outstanding service. As a testimonial of the esteem of his associates and many friends in Committee D-13, Professor Ball was presented with an appropriate Scroll and a gift by Dr. Frederic Bonnet, American Viscose Corporation. Preceding the presentation of the Scroll, Giles E. Hopkins'26, Technical Director of the Wool Bureau, New York, addressed the gathering describing some of the outstanding services rendered by Professor Ball to D-13 and to the Society. Classmates will be interested in the inscription on the Scroll: "A Token of Esteem and Affection to Herbert J. Ball. In recognition of twenty years of conscientious service as chairman of Committee D-13, the textile committee of the American Society for Testing Materials; His valued contribution to the development of standards and test methods in the textile industry; His vision and courage in guiding that committee in the progressive growth to its present high standing and position of prestige in the industry; His integrity and sincerity, which has inspired all who have worked with him; This formal acknowledgment is presented by his associates on the occasion of this luncheon held in his honor."

Space does not permit the complete reproduction of the remarks by Mr. Hopkins but it is interesting to note that he commenced by quoting Professor Emeritus G. B. Haven'94 of the Institute, who related how in 1917 he had been in Washington on other business and chanced to pass a meeting room in the hotel where he was stopping. His attention was attracted by an unobtrusive sign which stated that the room was reserved for the textile committee of A.S.T.M. Professor Haven was interested in textiles, too, but he had never heard of any group activity on testing methods for textiles. His remarks related to complete lack of standardization in the textiles at that time and that realization prompted Professor Haven to join the meeting, where he discovered a scant handful of men discussing tire cord. Some time later, Professor Ball was chosen chairman of D-13 and served for 10 successive two-year terms. The speaker went on to elaborate the qualities which had made Herbert such an outstanding success as chairman and concluded by listing a total of 13 different responsibilities which Ball had carried out in connection with the A.S.T.M., including the presidency from 1942 to 1943. Herbert is a professor and head of the Textile Department at the Lowell Textile School, Lowell, Mass.

Under date of April 21, a clipping was received from Harold Coes which reads as follows: "The National Management Council has named Harold V. Coes, vice president of the American Management Association, as consultant to the United Nations. The council represents all other United States management societies and business groups in their foreign affairs. Mr. Coes will also represent business men in Europe and Latin America through the International Committee for Scientific Management." As noted previously in this column, Harold was assistant to Paul Hoffman, head of the E.C.A. and was head of the Industry Division with that organization in Paris.

The Secretary is indebted to Henry Darling for the following note from Robert Cushman, II, who is in Portland, Oregon: "I have not been in Boston since 1947 when Mrs. Cushman and I spent our summer vacation in Kingston, Mass. Mrs. Cushman is now a permanent invalid in a local hospital and I live alone in the large home we built about 29 years ago. I had planned to retire last June 1 but actually retired on May 1 due to a heart attack. My son and family, three grandchildren, live about 10 miles out in the country. My activities are all leisurely in nature. Am serving as president of the Oregon Section, A.S.C.E. this year and that gives me something to think about. Have been president of the M.I.T. Club of Oregon for many years. Our Club has been rather inactive and we never get together unless some executive from M.I.T. shows up on the scene. Remember me to any '06 men you may chance to see."

With reference to Henry Darling, it is understood he has definitely retired from his office as a vice-president of the New England Telephone and Telegraph Company. He was eligible to retire in February but prolonged his stay to attend to a few special matters included in his responsibilities. The Secretary is not aware of Henry's plans for the future but at one time I know he and Mrs. Darling were considering taking up a permanent residence on Cape Cod and doing extensive traveling. Henry is the last of the '06 men to retire from the New England Company. – Under date of May 9, the Secretary received another letter from H. S. Philbrick whose letter of February 13 was included in the May Review. He expresses appreciation for being included in the notes and adds: "It hardly seems possible that nearly 44 years have passed since we left M.I.T. Am sorry that I have not kept in closer touch in all these years. Once in a while I get out the old class book and wonder how we look now. I can get some idea by looking into a mirror."

The Secretary regrets to report the passing of two classmates: Carl Frederick Northrup, VI, and Killey E. Terry, Jr., VI. At the time of his death, Northrup resided at 92 Westmount Avenue, Elmira, N.Y. The class records show he had been in Elmira since 1935 but he had shown little interest in class affairs and further information concerning him is not available. Terry resided at 175 Mason Street, Westbrook, Maine, and he was a director of the S. D. Warren Company in charge of engineering and an official of several Maine water companies. He was a former president of the American Pulp and Paper Mill Superintendents Association and long active in local civic affairs. He had lived in Westbrook for 40 years. The following additional information concerning him is taken from the Portland, Maine, *Express* of April 1: "Born in New Bedford, Mass., May 2, 1883, he was graduated from . . . Technology in 1906 and became affiliated with S. D. Warren Company four years later. He retired from the post of chief engineer at the company a year ago, and since then has served as director of engineering. He was president of the Gardiner Water Power Company, and a director of the Presumpscott Water Company and Sebago Improvement Company. At one time he was active in Republican politics in Westbrook and served as president of the Westbrook City Council. He was chairman of the board of regents of the Walker Memorial Library, a member of the board since 1941, and at the time of his death was chairman of the Westbrook School Building Committee. He was a member of the American Society of Mechanical Engineers, the Technical Association of Pulp and Paper Industry, the American Pulp and Paper Mill Superintendents Association and a charter member and president of the Westbrook Kiwanis Club. He attended the Warren Congregational Church. His wife died in 1948." – JAMES W. KIDDER, *Secretary*, 215 Crosby Street, Arlington 74, Mass. EDWARD B. ROWE, *Assistant Secretary*, 11 Cushing Road, Wellesley Hills 82, Mass.

• 1907 •

Under date of May 5, 1950, I received a most welcome letter from Edward H. Marsh, who is a deputy commissioner of health for the county of Westchester, New York. Ed did not graduate with our Class but has always been one of our interested members. Some of you will remember him as having been an officer in our Corps of Cadets during our freshman year at the Institute. His letter follows, almost in its entirety: "I was bitterly disappointed not to have been able to join with the Class last June at Oyster Harbors but just at that time was feeling below par and didn't think the trip was wise. When I left the Class, it was to follow the family tradition (which up to that time I had consistently refused to do) and study medicine. Received my M.D. from Cornell in 1909 and began practice in Brooklyn, meanwhile accepting a commission in the Medical Corps of the New York State National Guard. You may remember that I always had a yen for the uniform and while at the Institute was a member of the Old Salem Cadets. In 1916, I accompanied my regiment to the Mexican Border and when I returned, joined the staff of the New York State Department of Health. During World War I, I was assigned to extra-cantonment control of venereal disease and didn't see any action. Following the war, I attended the school of public health of New York University and received the degree of doctor of public health. For ten years was secretary of the Public Health Council of the state of New York and in 1930 came to Westchester County as deputy commissioner of health. Meantime, my yen for the army continued, and I was in the reserve corps until called to active duty in November, 1940. I remained in service

(colonel) for six years and six days until finally retired for physical disability, after which I was recommissioned in the Honorary Reserve. During the war, I was assistant surgeon, Second Service Command, with headquarters on Governors Island, N.Y. On several occasions, one for about six weeks, I was acting surgeon with some hundred-odd military posts, camps and stations for which I was responsible for all medical department activity including at the peak some 30,000 hospital beds. In November, 1946, I went on terminal leave and came back to my old position during the winter. In 1925, I married Edith Falter, and family doubled in the course of the next five years. The boy graduated in 1947 from Rensselaer Polytechnic Institute with a B.S. in civil engineering and was awarded a fellowship in hydraulics at Louisiana State University, from which he received his M.S. in 1948. He is now an instructor in civil engineering at the University of Connecticut. The daughter is now completing her sophomore year at Sweet Briar College, Virginia, where she is majoring in statistics. That's my life story in a nutshell. I have never lost interest in the doings of the Class of 1907, and the first thing I read in The Review every month is your column. Please extend to all '07 men an invitation to call on me at my home in White Plains when in the metropolitan area." His home address is 71 Heatherbloom Road, White Plains, Telephone W.P. 8-0491; and his business address is County Office Building, Telephone W.P. 9-1300, Extension 340.

In response to a letter that I wrote on March 8 to Roland H. Willcomb, whose address is Route 1, Box 235, Silverdale, Wash., I received from him the following letter written on April 20: "A year ago January, I was summarily dismissed from my position with the State Highway Commission of Montana. This was done at the insistence of the recently elected governor and was consummated by trickery over the vehement protests of the Commission. It's a long story, but I declined to allow the Commission to force the matter into the courts. I was approaching retirement age – I was 65 on November 30 last year. Consequently, I am now divorced from professional responsibilities and have made little effort to find any. So what am I doing? Well, I took my liberty to make some long postponed visits, one to my mother, now living with my sisters at Akron, Ohio. I pinch-hit for a photographer friend while he was recuperating in the hospital from an attack of heart trouble. I spent some time with friends in western Washington. Then I purchased a small tract on the east shore of the Hood Canal in Kitsap County, Wash. My place lies just off an oiled surface highway about 15 miles northwest of Bremerton. Seattle is reached from Bremerton by ferry across the Puget Sound, about an hour's run. This tract was entirely unimproved, covered by a 30 years' growth of timber. Our tract faces west, and looking across the canal, one sees the Olympic Mountains. We are approximately 75 miles east of the Pacific Ocean. During last fall and the past winter, I cleared the trees for a house site and approach road together with a garden plot. My basement walls are poured, lumber is on the ground, and the erection of a modest house will soon be under way. My garden is planted to the extent advisable. We have been occupying a small cottage loaned to us by an indulgent neighbor, somewhat cramped but modern and cozy. So I have been plugging along steadily in order to get into our own quarters as soon as reasonably possible. I am doing most of the work myself, with such assistance as requires such mechanical devices as bulldozers, cement mixers, and so on. I am in excellent health, and my return to hard labor has restored much of my youthful figure, if not complexion. About the time your letter arrived, Bess (Mrs. W.) had the misfortune to slip on some wet leaves just outside the cottage door, and in falling she sat on her left foot, spraining her ankle and breaking the fibula. She is now out of the cast and navigating once more with no more assistance than a cane. But in the meantime, I was running a two-ring circus, assisting with the household chores as well as pushing forward my building enterprise. So there you have it. I cannot truthfully say that I shall remain retired. That is perhaps too much to expect. And I must confess that in this near paradise with plenty to do, or not to do as I choose, there is more enjoyment and satisfaction in living than any white man is entitled to have."

Most of you will remember George A. Griffin, who graduated with our Class in the Course of Civil Engineering and who during our undergraduate days was one of our most popular classmates. The following story is taken from a clipping from the Falmouth, Mass., *Enterprise* of March 31, 1950: "Tomorrow is an anniversary for George A. Griffin, water department superintendent, who rounds out 25 years with the department. Mr. Griffin joined the Falmouth department as engineer in 1925. At that time he had already had extensive experience in the water supply field. After specializing in hydraulics in his civil engineering course at M.I.T., he worked with the U.S. Department of Agriculture on drainage and irrigation investigations, mostly in Illinois, Missouri and the Carolinas. Next he was assistant engineer for the water works department of the town of Wrentham, Mass., and a consulting engineer while Bristol County was extending its water system. In 1910 he joined the New York city board of water supply, first as field engineer during construction of the Kensico dam, and later as designer. The first World War took Mr. Griffin from the water supply line for a time. He was working at the state pier in New Bedford where Great Lakes 'whalebacks' were being converted into oil tankers. From there he went to Philadelphia to help in construction of marine railways for the Emergency Shipping Board. Next came four years with the Providence, R.I., water board as assistant design engineer. Providence at that time was greatly expanding the so-called Scituate water supply system and Mr. Griffin worked on construction of the dam and reservoir. Having vacationed at Woods Hole, Mass., since 1906, when he married the former Miss Ellen F. Gifford, Mr. Griffin came here with his family in 1924 during a spell of illness. Mr. Griffin's first position with the water department was as engineer. In 1927 he took over as office manager and became superintendent and engineer in 1944."

The issue of the Boston *Herald* on Sunday, May 7, 1950, had an entire section devoted to articles relating to Canadian international trade. On the first page of the section is an excellent picture of our classmate, Rt. Hon. Clarence D. Howe, who is the Minister of Trade and Commerce for Canada, together with a long article by him telling of the various ways in which Canada is seeking to improve its world trade. – I have recently received from the Alumni Office two addresses for men whose whereabouts we have not known for many years. Robert Tappan, who was associated with our Class in the Course in Architecture, is at 320 Cherry Street, Panama City, Fla.; and Laurence T. Walker, Major, U.S.A., retired, is living in Temple, N.H. – The final report regarding the Alumni Fund for the year 1949-1950 shows that 108 classmates, or 97 per cent of our quota, contributed $3,-159.57 which represents 122 per cent of our quota. This is a creditable showing, and as class agent for the Fund I express my appreciation to all of you who contributed. – BRYANT NICHOLS, *Secretary*, 23 Leland Road, Whitinsville, Mass. PHILIP B. WALKER, *Assistant Secretary*, 18 Summit Street, Whitinsville, Mass.

• 1908 •

The fourth and final dinner meeting of the Class for the 1949-1950 season was held at Thompson's Spa Grill Club Room, Washington Street, Boston, on May 16 at 6:00 P.M. The following were present: George Belcher, Henry Sewell, Jeff Beede, Leslie Ellis, Stiles Kedy, Harold Gurney, Myron Davis, Sam Hatch, Doc Leslie and Nick Carter. Following the dinner, Henry Sewell suggested that in lieu of the reunion in June which had been given up, he and Mrs. Sewell would like to have us and our wives come to his place in Norwell, Mass., on Saturday, June 10 for an afternoon's get-together. The invitation was promptly accepted, especially by those who had visited Henry following our 40th and had been introduced to his famous Fish House Punch. Myron Davis announced that he and Gladys Burdick of Wellesley, Mass., were to be married on June 2, with a honeymoon at Bermuda, so couldn't be at Norwell. The Class extends congratulations and best wishes to Myron.

Colonel Willard F. Rockwell, Chairman of the Board of the Standard Steel Spring Company of Coraopolis, Pa., addressed the Chamber of Commerce luncheon in Buffalo on March 22. He is recognized as one of the nation's top leaders in the fight against Socialism. – Herb Cole, Jr., retired on June 9 after many years with the New England Telephone and Telegraph Company. He can be reached at 17 Thompson Avenue, Hingham, Mass. – Eugene L. Brown, Jr., of Manhattan Beach, Calif., has been promoted to major. – We have the following changes of address to report: William F. Grimes, in care of Mack, 5701-11th Road North, Arlington, Va.; The Rt. Rev. John I. B. Larned, Post

Office Box 222, General Post Office, Brooklyn 1, N.Y.; Henry R. Sewell, Lincoln Street, Norwell, Mass.; Geoffrey W. Welch, Longville, Minn.

We regret to announce the deaths of the two following classmates: Gerald T. Hanley died on March 13 in Providence, R.I. In 1948, Hanley retired as president of the James Hanley Company of Providence, a brewery which was founded by his father. Walter E. Poor died on April 4 in New York City. He was chairman of the Board of Sylvania Electric Products, Inc., and the youngest of three brothers who founded the Hygrade Lamp Company of Danvers, Mass., parent organization of the present Sylvania Electric Products, Inc. — H. LESTON CARTER, *Secretary*, 60 Batterymarch Street, Boston, Mass.

• 1909 •

This is the last of the class notes until the November number of The Review. Your Secretaries are grateful to all who have sent in news items during the year and wish you all a most pleasant summer. Last month the notes were rather scarce as the Review Secretary has been out of circulation for a month; but he is back to normal again, and this month we have more than our usual quota of class items. — Molly, XI, has sent a notice that effective May 1 his office address was changed from 285 Madison Avenue to 366 Madison Avenue, New York 17. His new telephone number is Murray Hill 7-8747.

We announced in the November number describing the 40th reunion that through the efforts of Molly and his committee our class fund had reached a total of $80,468.79, with another $1,000 pledged, plus generous contributions by Tom Desmond and some $76,000 provided in their will by George, VI, and Mrs. Witmer. We have just called up the office of the Development Fund and have learned that $27,605 more has been pledged and in part paid by our Class. When our great contribution of only last year is considered, this is certainly a remarkably large increment.

In a recent number of the Hartford *Courant* we noticed the headline "Nickerson to Receive High Award" accompanied by Johnny's, II, picture. He was given the first annual National Industrial Incentive Award for "outstanding contribution to industrial incentives in the United States" by the Society for Advancement of Management and the Management Division of the American Society of Mechanical Engineers at a meeting at the Hotel Statler, New York. To quote from the citation: "You have worked tirelessly to extend the application of sound incentives in industry. You have contributed freely in professional writing and speaking for many of our management and engineering societies. Always an industrial engineer, you have served on governmental boards called up to settle labor disputes through proper work assignments. In war production, you took charge of the division organized to further the installation of incentives. Then and since, you have urged the abolition of the congressional act that prohibited the use of scientific management tools in governmental works. In August, 1949, this was deleted after thirty-three years of continuous reenactment." As most of you know, Johnny was connected with Cheney Brothers silk textiler at Manchester, Conn., for many years. During the war he was a member of the textile industry committee of the United States Labor Department and became a consultant of the War Production Board. After the war, he joined Johnny Willard, II, with Bigelow, Kent, Willard and Company in Boston. Of late, he has been on his own as a consultant in Hartford. The Class congratulates Johnny for the well-deserved honor.

We have already alluded to the fact that in late years Johnny Davis, II, has taken up painting as an avocation. In a recent exhibition by the Business Men's Art Club of Boston held at the Paine Furniture Company, Johnny exhibited his water color, "New England Corner." — Recently, Paul received a post card from Chet Pope, X, from Chile showing a lake and a snow-covered volcanic cone in the background, entitled, *"Volcan Osorno desde Puntiagudo."* The message stated: "Marcia and I are spending a month here, then B-A (Buenos Aires), Montevideo and Rio."

We at the 40th remember well Ramón Muñoz, III, and the accounts of his activities in behalf of the Institute in Mexico. He was the hit at the Council luncheon just prior to the reunion. He has written Paul a most interesting letter: "What a most pleasant surprise to receive your heart-to-heart letter, which indicates that you have fully recovered from the illness which prevented you from joining us at our 40th class reunion at Cape Cod. Now to throw full light on the meaning of 'N.L.' These letters are the initials of Nuevo Leon, that is the state of which Monterrey is the capital, and there is no secret about it.

"Now for some history about myself. In 1948, after 33 years of not visiting M.I.T., I made a trip to Cambridge and through the kindness of Lobby I talked with Dr. Compton, who invited me to one of the regular Administrative Council Luncheons, and there I met Jim Killian, who later I knew was to become President of M.I.T. I soon found out that Jim was my Sigma Chi Fraternity brother, and I got well acquainted with him so that on my following two visits to Boston during the Convocation and at the time of the 40th class reunion he asked me to the dinner of the Honorary Secretaries at Newton, Mass., and honored me by having me at his table, requesting that I should say a few words on this occasion, and you might have heard that I did it. It had been many years since I addressed an audience in Boston. In fact, it was 1904 when I found myself at the police station after the Harvard-Tech Parade. Later on I met Jim on so many occasions that by the time I left Boston, when I invited him to come to Mexico for a visit, he was Jim to me and I felt proud that I was Ramón to him.

"You want to know something about myself. I will not bother you with many details, but since I left the Institute I devoted myself to mining and spent at least 20 years mining mostly in Mexico and the United States, and three years in Europe, and later established my office as consulting engineer. In about 1920 my partner and I started developing natural gas in Northern Mexico and built an international gas line that feeds gas to Monterrey from Southern Texas, and we have continued actively in this business as well as in mining.

"A good many years ago I started the M.I.T. Alumni Club of Monterrey, and in order to make it a success I have been reelecting myself president annually for this period of time. I am glad to say that we have 22 active alumni members in Monterrey and the success of the club has been due in great part to the visits of Lobby to Monterrey. During the early part of March, Lobby and I went to Mexico City to attend the annual meeting of the M.I.T. Alumni Club of Mexico City which was given in Lobby's honor. We had prominent speakers such as Bob Winters'33, Minister of Resources of Canada, and Johnny Fitch'24, Chief Engineer of the Export and Import Bank in Washington. The gathering was a great success. Following this Lobby, Jenkins'32, and I spent several days in Meridá, Yucatan, southeastern part of Mexico, visiting the ruins of the Mayan civilization."

Lobby, who is mentioned in Ramón's letter, sent Paul a copy of the *Utility Spotlight* in which there is an item stating that Utah Power and Light, under the leadership of President George Gadsby, V, is building for a sharply increasing electric load. The construction is proceeding on a '49 to '53 construction program of 61 million dollars. The earnings of the company are substantial and it is in sound financial condition. — We have learned that Senator Tom Desmond, I, has introduced a bill in the New York legislature increasing the membership of the Board of Regents from 13 to 20, the additional number being appointed by the governor. The Regents supervise the extensive educational program conducted by the state and the present number is entirely inadequate.

Again we regret to report the death of another classmate, James Stephen Groff, VII, head chemist at the United States Naval Torpedo Station, Newport, R.I., until he retired in 1944 after 34 years of service. He came initially from Newport and prepared at University School in Boston. On leaving the Institute, he came to the Torpedo Station in 1910 as a chemist with a single helper. Before his retirement he had built the department into a complete division with a staff of 24 trained experts in chemistry, metallurgy and physical material inspection. During his years of service he also made many inventions in electroplating, metallography, heat treatments and oils for lubrication, all directed to improving the performance of torpedoes. He held many high positions in the Masonic Orders and Knights Templar, and was a senior warden at St. John's Church. He is survived by his widow, Martha Schleith Groff. — PAUL M. WISWALL, *Secretary*, Box 125, Glen Ridge, N.J. CHESTER L. DAWES, *Review Secretary*, Pierce Hall, Harvard University, Cambridge 38, Mass. *Assistant Secretaries:* MAURICE R. SCHARFF, 366 Madison

Avenue, New York 17, N.Y.; GEORGE E. WALLIS, 1606 Hinman Avenue, Evanston, Ill.

• 1910 •

Now that I am back on the job again perhaps the notes for the Class will be voluminous enough to make up for their scarcity in previous issues of The Review. On March 9, I sailed on the S.S. *Excalibur* of the American Export Lines with Mrs. Cleverdon. We had a wonderful trip to Marseilles where we had two days; one of which we took an auto trip to Arles and Avignon. From Marseilles we went to Naples, visited Pompeii and Sorrento, and had luncheon at the Cappuccini Hotel on the Amalfi Drive. From Naples we went to Alexandria; left the ship and went to Cairo and Luxor; visited Egyptian temples and the Valley of the Kings; saw the tomb of King Tutankhamen; crossed the Nile on the native boats; and carelessly allowed some Egyptian to appropriate my camera. After six days in Egypt we re-embarked on the *Excalibur* and went to Athens where we met Achilles Hadjisavvas'10, his wife and daughter. We spent the day with them and had the privilege of showing them the Acropolis which they had not visited in many years. Achilles is now full director of the Thessalian Railway in Greece and is having his troubles with the inflated currency which is now 15,000 drachmas to the dollar. From Athens we returned to Naples where we left the *Excalibur* and visited Rome, Assisi, Perugia, Florence, and Venice in Italy. We then visited Switzerland and France. We spent 10 days in England and drove an Austin car wherever our fancy prompted us. We visited Oxford, Cambridge and Stratford and had a wonderful time. We returned on the *Mauritania*, landing in New York City on May 15. It was a trip of a lifetime and I hope I may repeat it in another 20 years.

Mrs. Mylchreest writes that her husband, George, is critically ill and will be unable to attend the 40th reunion. It is our earnest hope that he will be fully recovered in the near future. Earl Pilling, who expected to attend the reunion, has been taken ill and will have to be in the hospital for some time. – I received a long letter from Jimmy Noble who has retired; but, as he says, he is of that temperament where he is neither happy sitting down or standing up. However, he wants me to give Dutch Crichton and Joe Northrop his love if they attend the reunion. – Erford Potter writes that he recently met Paul Hopkins in New York City. Paul and his family managed to get out of Shanghai, China, during the last disturbance and is now back in the States for good. His address for the present is the American and Foreign Power Company, Inc., 2 Rector Street, New York City. – Dick Fernandez has been retired from the Monsanto Chemical Company and is now with the Raffi and Swanson, Inc., manufacturing chemists in Chelsea, Mass. Louis French writes he cannot attend this reunion but promises to be on hand for the 50th. B. M. Pettit is now on his way to California so he will be unable to attend the reunion.

Hiram Beebe writes as follows: "It has been some time since I wrote you about the facts of life; and about all there is to report is that after working six months as a weight engineer on the P-38's with Lockheed, the president of the Western Industrial Engineering Company, who had known me in previous years, called me over to straighten out trouble in the assembly line on the pilot's compartments on the Consolidated Bombers. This did not take as long as he figured and I spent about two months after the assembly line got into gear inspecting the plant, and was then placed in charge of all materials. Due, not to any engineering experience but to certain basic ideas as to availability of materials and from inspection of the similar facilities in other fabricating plants of the same character, I designed and had erected vertical storage for the steel plates, from $\frac{3}{16}$ of an inch up to 1½ inches, which worked out very well, and which decreased the floor area occupied by the steel plates by about 40 per cent, giving exactly that much more shop area for fabrication. I also concentrated the various assembly materials in one place, and put in a system of materials being requisitioned and delivered at least the day before they were needed in various parts of the shop. I believe the greatest asset in the success of this work was the fact that, due to lack of experience, I had no preconceived ideas, and used the straight line as the shortest distance between two points. Of course, another great asset was the fact that these were war times and the usual parleys necessary in invading the sacred domains of other departments were unnecessary. After Japan folded up, the manager of the company I was in sold out to a refrigerating device concern. Since then I should be classed as 'retired,' although I have been very busy in various matters such as building houses and investing in real estate titles that require considerable skill and time to work out. As you have probably noticed, I am secretary of the M.I.T. Club of Southern California, and we will be putting out a new directory inside of a month."

Edward S. Howe, who is retired, is devoting his time to civic affairs as noted in the *Weekly Independent* of Plymouth, Mass., which reads: "Edward S. Howe, a native of Kingston who has retired to his hometown after a lifetime of work as an engineer, has announced his candidacy for election to the Kingston Board of Selectmen. A graduate of Kingston High School and of . . . Technology and a veteran of the World War I, Mr. Howe's engineering work and travels have taken him around the world and into twenty foreign countries. During the second World War, Mr. Howe was employed by the Federal Government on war work in Washington, D.C., Atlanta, Georgia, and New York. He has also contributed his engineering knowledge to various Kingston town activities. Mr. Howe has been actively interested in the progress and future of Kingston. He has attended many public hearings in Boston and last year was instrumental in having an article inserted in the town warrant to study improvements in Kingston's waterfront and waterways and to bring additional revenue to the town."

It is with sorrow that we have noted in the *Courier* of Littleton, N.H., the death of Stillman Batchellor: "Word was received this week of the death of Stillman Batchellor in Healdsberg, California, on January 23. The funeral services and burial took place in Healdsberg. Mr. Batchellor attended schools in Littleton and graduated from Dartmouth College in 1905. He went on to take engineering courses at M.I.T., adding to his mining and engineering knowledge gained in Mexico and California. During World War I he was an officer in the engineering service. Due to ill health he gave up mining work and went to California where he bought a fruit ranch."

Theodore B. Whittemore writes as follows: "My doctor will not allow me to take in the 40th reunion. In February everything looked bad for me but things are better now." – HERBERT S. CLEVERDON, *Secretary*, 120 Tremont Street, Boston 8, Mass.

• 1911 •

At this mid-May writing of the final set of class notes for the current volume, of course the chief topic of interest for '11 men is the 40-year reunion, scheduled for Friday, June 8, through Sunday, June 10, 1951, at East Bay Lodge, Osterville, Cape Cod, with adjournment on Monday, June 11, for the 1951 Alumni Day at M.I.T. in Cambridge. Details are now under way and *your* first responsibility will be to give due heed to the class dues bills which will reach you soon – for with them will be included an advance "indicator" on which you should indicate the chances of your attendance, from which a summary can be given for the first issue of the reunion publicity piece, "Thelevener," Volume VII.

It is fine to learn that another "junior '11-er" marriage has been consummated – that of Anne Wilson, daughter of Mr. and Mrs. I. W. Wilson, XIV, to Herman Oakley Baker at Pittsburgh, Pa., on April 29. He served with the American Field Service during World War II and graduated from Williams College. "The young couple expect to live in or around Boston," writes Bun, "and naturally I would pick this spot for them if they are not to live in the Pittsburgh district. I would like to think that this meant that there was more probability of my visiting them at such opportune times as would permit me to check in with other classmates at some of our get-togethers in Boston." That, of course, was my cue to urge Bun to do his best to be in Cambridge for the 1950 Alumni Day on June 12.

It's also a pleasure to be able to report that our own daughter, Helen Elizabeth, and her husband, Peter Barton, returned early this month from a fortnight in Bermuda, as a result of which Helen Elizabeth is almost back to normal after her battle with polio, with which she was stricken in mid-August, 1949. As a result, Sara was able to go to Cornish, Maine, to open our summer place, "Wellsweep," for the season, after having been almost continually at the Barton home in Boylston, Mass., caring for the Barton's three youngsters, aged eight, four and one-half, and three. Please remember the latch-

string is always out at "Wellsweep" in Cornish. Meanwhile, our younger son, George W., has accepted a position with the Bennett Printing Company in Boston and like the Bakers is househunting there, along with his wife and infant daughter. For the present they are with Jan's parents, Mr. and Mrs. Frederick Rounds in Woonsocket, with George commuting. Our big son, Orville, Jr., is still busy operating Denison Press up in Cornish, Maine, where he and his wife and three-year-old daughter live – our summer place being almost directly across the street from their home.

Bancroft Hill, I, retired as head of the Baltimore (Md.) Rapid Transit System but still available as consulting engineer at 1812 Sulgrave Avenue, Baltimore 9, Md., has just published a book titled: *Depreciation, Condensed.* In a one-page preface Ban says: "For many years I have felt there was a need for a short book on depreciation, a book not for experts on the subject, if indeed there are any such beings, but for the executive, the businessman, the banker, the lawyer and the engineer. The subject is so vital and the general knowledge about it so vague that it might well be termed the last financial frontier. . . . It is hoped by circulating this advanced copy among my friends and their friends that through their comments and advice any statements that are not clear can be clarified and any omissions supplied." Featured by particularly readable type, this 65-page book contains five chapters, with descriptive yet brief titles: Why This Book?; What Is Depreciation?; Accounting for Depreciation Rates; and Reserves. The principal reason for writing the book, according to Ban, is that "depreciation affects all of us, for no matter what we may do or not do, we cannot escape its effects." He defines depreciation as "that loss of service value which no proper maintenance can prevent." "There are many causes of depreciation," according to Ban, "but the principal divisions are: wear and tear, obsolescence, inadequacy and superfluity, and requirements of public authorities." After a thorough discussion of rates and reserves, he finally concludes: "Although the results of this consumption of property may not be apparent until some time in the future, maybe the distant future, the expense is nevertheless real and important. It may be the most important expense in a manufacturing operation." Congratulations on a fine addition to the accounting field, Bancroft, and thanks for sending me a copy to have available for my business friends. That subtitle on the cover is choice: "Important but not popular."

Phil Caldwell, I, recently sent me a clipping from the New York *Herald Tribune* of May 4 with a fine picture of Louise Seeley, attractive wife of Nat Seeley, II, which reads: "Mrs. Nathaniel S. Seeley, 115 Van Rensselaer Avenue, Shippan Point, Stamford, Conn., has been appointed chairman of the Fairfield County, Conn., committee of the development fund which is seeking to raise $10,000,000 nationally for Barnard College. . . . Mrs. Seeley is a member of the Stamford Board of Representatives." Best of luck to you, Louise. – Had a nice letter in late April from Helen Van Tassel, widow of the late Ted Van Tassel, X, written from New Braunfels, Texas, where she has been spending the winter and spring with her daughter and son-in-law, Lieutenant and Mrs. Russell Harmon, who were with their dad and mother at our 35-year reunion in 1946 at Osterville. Russ is now communications officer at Randolph Field and the young couple have bought a nice ranch-type house at 1280 Cross Street in New Braunfels. Helen plans to return to her home that she and Ted maintained for some time at 15 Ives Street, Beverly, Mass., sometime in July. She is rather anxious to connect with some hotel chain, she writes, and get a position as housekeeper or other executive line. I am trying to make contacts for her and if any of you know or hear of any openings, please contact Helen – she'll be so happy to hear from Ted's many friends among '11 men.

At the 82d annual convention of the American Institute of Architects at Washington, D.C., in mid-May, Ralph Walker, IV, was honored by re-election for a second term as president. We are proud of you, Ralph. Speaking of elections, Alumni Secretary Don Severance'38 advised me on May 15 that I had again been chosen by '11 men as Alumni Council Representative of the Class for five more years beginning July 1. Thanks a lot for this continued confidence, and I will do my level best to continue to deserve it.

Rufe Zimmerman, IX, Vice-president in charge of research and technology, United States Steel Corporation, reported on "Modern Research: Its Contributions" before the sub-committee on the Study of Monopoly Power of the House Committee on the Judiciary in late April. Referring to a statement in last December's fourth annual report to the president by the Council of Economic Advisers, Zim said that "United States Steel, in keeping with its policy and its position in industry, is equipped with the 'unique facilities' mentioned in the statement, and has been busily engaged in 'scientific and development experimentation' for more than 40 years." He then went on in some detail to describe major research accomplishments since the turn of the century, concluding with: "Industrial advancement such as we have in the United States is not simply the spinning of a single thread of progress by which one industry far outdistances the others, it is rather the weaving of a fabric, in which the many strands proceed together. The American steel industry, and with it United States Steel, has moved forward with giant strides in the past fifty years. The pace has been accelerated since the close of the First World War. American technology in the realm of steel is unsurpassed in the world today, and the American public is the gainer thereby."

Don Stevens, II, writes that his doctor "has thoughtfully recommended that I take my usual Miramichi fishing trip and keep away from the desk thereby." At recent Rotary Club elections in Marlboro, Mass., Johnnie Bigelow, IV, was re-elected for another term as secretary; while in Gardner, Mass., Obie Denison, VI, was elected club president for one year starting in July. Also, there are two mail address changes at hand: Allston T. Cushing, I, United States Department of Agriculture, 1402 Fidelity Building, Kansas City 6, Mo.; and Calvin P. Eldred, VI, 12 Winchester Arms, Winchester, Mass.

Of course you were all proud at the fine record 1911 made in Alumni Fund X, which closed this spring. Our 159 subscribers, tops to date, represented 132 per cent of our quota and placed us as Number One class in the entire list! Our combined contribution of $3,732 (for an average of $23.47) placed us fourth with 133 per cent of quota. Our congratulations to our friendly rivals in the Class of 1912 – who attained 200 per cent of their amount quota to lead the entire field! Classmates in the Metropolitan New York area led the Class with 59 per cent of them subscribing, the middle west was second with 55 per cent and Boston and vicinity third with 52 per cent. Here are the class figures: Boston and vicinity, 45 or 52 per cent; balance of Massachusetts, 10 or 32 per cent; other New England states, 13 or 42 per cent; Metropolitan New York, 32 or 59 per cent; balance of New York and New Jersey, 5 or 26 per cent; balance of Atlantic coast, 18 or 40 per cent; middle west, 21 or 55 per cent; southwest and west, 8 or 27 per cent; territories and foreign, 7 or 33 per cent; entire class, 159 of 356 or 45 per cent. A fine showing!

Now, classmates, before saying "adieu" until the fall, when class notes will be resumed in the November opening issue of Volume 53, may I urge you to reread the first paragraph of these notes and make your plans accordingly. Happy landing! – ORVILLE B. DENISON, *Secretary*, Chamber of Commerce, Gardner, Mass. JOHN A. HERLIHY, *Assistant Secretary*, 588 Riverside Avenue, Medford 55, Mass.

• 1912 •

Charles A. Cary, Vice-president and Director of the Du Pont Company, addressed the Traffic Club in Wilmington at its annual dinner. Cary joined Du Pont in 1918 and was later made superintendent of the Brandywine Works. In 1921, he was made assistant superintendent of the Nemours, W.Va., works. He has held top posts in such Du Pont units as old Hickory, Tenn., the rayon department, the viscose process department, viscose division and rayon division. He became assistant manager of the nylon division of the rayon department in 1949, one year later becoming manager of the division. He was elected to his present office on December 16, 1946.

John S. Selfridge has been elected financial secretary of the companies comprising the Fireman's Fund Group in San Francisco. John joined the Investment Department of the Fireman's Fund in 1936. – Abram Freedman was the guest speaker at the New Bedford Art Group, his subject being "Modern Art in Daily Living." He has studied under leading artists, including Gordon Grant, Eliot O'Hare and Ralph Pearson. – Erwin Schell was the speaker at a dinner meeting of the New London Alumni of M.I.T. The meeting was called to get firsthand information on M.I.T.'s program of expansion and development.

Hamilton Merrill, X, vice-president and director of Manning, Maxwell and Morre, Inc., has been named vice-president in charge of the Consolidated-Ashcroft-Hancock division, maker of valves and gauges, it was announced on May 5, 1950. The division operates plants in Bridgeport and Stratford, Conn.; Watertown, Mass.; Jersey City, N.J.; and Tulsa, Okla. Merrill has been with the company 30 years. — FREDERICK J. SHEPARD, JR., *Secretary,* 31 Chestnut Street, Boston, Mass. LESTER M. WHITE, *Assistant Secretary,* 4520 Lewiston Road, Niagara Falls, N.Y.

• 1914 •

At the all-Technology conference in connection with the work of the Committee on Financing Development held at the Institute on April 22, your Secretary noted that in addition to himself the following '14 men were present: Bert Hadley, Leicester Hamilton, Ernest Kerr, Philip Morrill, and Art Peaslee. It is understood that many classmates all over the country have been working most earnestly for this good cause. In New York our Class President, Charlie Fiske, has made a fine showing.

Dean Fales has recently submitted a report to the state of New Hampshire on methods to improve the state's automotive transportation system. The survey was made at the request of Governor Sherman Adams. Fale's report advocated the centralization of the control and maintenance of motor vehicles, together with an increase of 150 vehicles to be owned by the state in lieu of the large number of cars now being rented on a mileage basis. Fales claims substantial savings and better control if the plan were to be put into effect. The governor has presented it to the executive council for action.

It seems only yesterday that these notes were largely about engagements and marriages. Then came the reporting of new arrivals in the families of '14 men. But what prevails today? Three notices came from the Alumni Office this month; one was a retirement and two were deaths. Time certainly does march on. The retirement was that of Harry M. Keating from the Smith Paper Company of Lee, Mass. Keating has been in the paper business ever since he graduated from Course X. He was first with the Strathmore Paper Company at Woronoco, Mass., then with the American Writing Paper Company at Holyoke. When at Holyoke, he was in frequent contact with our late classmate Jimmy Judge, who was then with and later became president of the Highland Manufacturing Company, paper processors. Twenty-five years ago, Keating joined the Smith Paper Company, and has served in various capacities. At the time of his retirement under the company's established pension plan, he was technical director in charge of research. Keating graduated from Bowdoin College before coming to the Institute.

The first death was that of Don Kelly, X, on last August 15. Kelly came to the Institute from Sandusky, Ohio. When he left the Institute, he returned to Sandusky and at the time of his death was president of the Kelko Products Corporation. — The second death was that of Chester R. Gardner, IX, formerly of Somerville, Mass. Gardner's death occurred on April 11. For 20 years before his death, Gardner had been a civil engineer with the Public Works Department of the Navy and had been stationed in the District Public Works Office of the Third Naval District at New York. Since 1933, he had been in charge of the Inspection Force of the District Office. Gardner prepared for the Institute at the Somerville, Mass., high school and after leaving the Institute spent some years with the Worthington-Blake and Knowles Pump and Machine Company at Cambridge before entering the Navy as a civilian employee. In World War I he served in the Signal Corps. He is survived by his wife, and a son and daughter by a previous marriage.

Each summer your Secretary has the pleasure of being visited by '14 men who are passing through Boston in connection with their vacation travels. About the time this issue of The Review appears in the mails, he expects to be sailing for Europe. As return is not scheduled until early October, he must forego this year the pleasure of these usual summer visits with classmates. Ross Dickson has consented to write the notes for the next issue of The Review, and these notes must be ready by mid-September. Why not give Ross a good volume of material to work on? — H. B. RICHMOND, *Secretary,* 275 Massachusetts Avenue, Cambridge 39, Mass. Ross H. DICKSON, *Assistant Secretary,* 126 Morristown Road, Elizabeth 3, N.J.

• 1915 •

By now, we've recovered from the big 35th reunion, details of which will be reported in the November column of class notes. A happy and enjoyable summer to you all and your families. I'd be most happy to see any of you who are in Boston this summer. Just telephone me at the office, KEnmore 6-7887 or at home, LOngwood 6-3438. At this date, I want to thank all the committeemen who have done such an outstanding job in making our reunion so successful. Yours was a labor of love and you all gave unsparingly of your time, interest, and expense. All the best to you committeemen.

Sam Berke and his family expect to be in Paris this summer and upon their return to remain in Boston for a time. This is welcome news to give us a chance to see them again and renew and refresh old friendships. John Dalton, Director of the Chemical Department, Pacific Mills, Lawrence, Mass., while south on business, visited his old buddy, Lucius Bigelow, who is head of the Organic Chemistry Department, Duke University, Durham, N.C. Lucius has been immersed in some important government development work. Congratulations to DeWitt Ramsay, Vice-president of Smith, Ramsay and Company, investment bankers, Bridgeport, who was recently elected president of the Connecticut Investment Bankers Association. From the Bridgeport *Independent:* "Mr. Ramsay, who lives at 230 Toilsome Hill Road, . . . is a graduate of . . . Technology and is a member of the Fairfield Board of Finance and the board of trustees of the United Congregational church of Bridgeport." Bert Adams, still entertaining the public with his fascinating and entertaining tricks of magic, boasts his fourth grandchild, Peter George Toumanoff, born on May 9 in Rosamond, Calif. Bert's daughter, Jane, married George Irakly Toumanoff, M.I.T.'42.

You just cannot beat nor even approach these sentimental old '15 friendships. It is a pleasure to give you these splendid letters from these fine classmates. From Parry Keller, 105 Fir Hill, Akron 4, Ohio: "Herman Morse and I are happy to know that your stopover in Akron last August was so enjoyable and hope that you can arrange to visit us again this year. We hope that Phil Small and Norris Kimball can join the next party. I met Phil Small some time ago at a meeting in Cleveland and we staged an informal and exclusive '15 reunion immediately afterward. Phil was sorry that it was not possible for him to join our party in Akron last August. He wants to know why we cannot have a '15 dinner meeting in Cleveland some time when you are passing through. My son is well and is still teaching at Case in Cleveland. I spend an occasional and enjoyable week end with him there. He enjoyed meeting you and Frances when you were in Akron last summer. I see Herman Morse frequently. I am pleased to say again that you continue to do a consistently top flight job with the class notes in The Review. The '15 column is thoroughly read and much appreciated. I am busy heading a campaign for funds for the Akron contribution to the Y.M.C.A. World Service Program. I am already in over my depth and sinking."

Ray Stringfield, 229 South Normandie Avenue, Los Angeles 4, Calif., writes: "Had a 58th birthday a few days ago; but since the first 100 years are supposed to be the hardest, I think I'll call it my 100th and see if the rest of the years soften up a little. The Los Angeles Rubber Group, which I started 21 years ago and is now a very thriving organization, gave me an honorary life membership at their Christmas party, and took a lot of pictures — so my face will probably be all over the rubber journals. Also five of us had a pleasant lunch and visit with Gene Place last month when he was here: Harold Crowell, Francis Boynton, Bob Welles, and John Gallagher. We'll be glad to see you and Frances at any time." A few weeks later another letter from Ray: "Sat across the table from John Gallagher at an A.C.S. meeting a few nights ago. He is still with the Texas Company and looking fine. I am heading for my cabin at Desert Hot Springs (across the valley from Palm Springs) this week end for a few days. What's the use of working so hard? No smog at Desert Hot Springs."

Allen Abrams, Vice-president, Marathon Corporation, Rothschild, Wis., writes: "The population-density of Technology men is low in this part of the country. However, we had an ingathering at Wausau on March 7 when we had our 'Development Dinner' addressed by Professor Schell. By the way, our classmate Marshall Dalton is doing outstanding

work and should be a source of pride to us all. One of my daughters is married and the other has returned from a year in Europe, so the situation is presently in hand. At the annual paper meeting in New York I ran into Ted Spear, Doug McMurtrie and many other M.I.T. men. Personally, I am spending much time in addressing groups who control the future of America – teachers, students, and labor – trying to point out the implications of the Welfare State. Now is the time, and so on. Best regards and commendations for doing a bang-up job."

Louis Zepfler has an exciting but restful retirement planned: "With 31 years' service with Esso I am looking forward to retirement in three and one-half years and to that end we bought a lodge on a lake in Minnesota in 1944, where we plan to live from April to November – then western, eastern and southern bases for November to April. My son has one more year at Tufts, my grandson is now six and headed for M.I.T., 1964, I hope. Here in Cranford, I have taken an interest in community affairs especially in amateur dramatics." – Phil Alger's sons are carrying on in his wake at M.I.T. From 1758 Wendell Avenue, Schenectady 8, N.Y.: "I appreciate very much the spirit in which you carry your secretarial duties, and I always enjoy reading your notes in The Review. My son, John R. M. Alger is due to graduate from VI-A this June with an M.S. degree. Through him we have renewed many pleasant friendships at the Institute. My second son, Andrew D. L., is now a student at the Rhode Island School of Design, with the hope of becoming in due time an industrial designer or stylist."

Lieutenant Colonel Ralph Mendelson could probably entertain us with his colorful Army experience all over the world. From Albuquerque, New Mexico, he writes: "I am 61 years old and have tried to retire from practice but discovered that I only transferred my professional worries from the office to the house. I finally took refuge in the Air Force and am now base surgeon at Kirtland Air Force Base in my home town. I have been through World Wars I and II and next year I expect to do nothing more than a little 'readin', writin', and rockin'.' I doubt that anybody in the Class of '15 ever heard of me, as one of the few doctors who attended the School of Public Health – Harvard and M.I.T., now defunct. For 10 years I was medical adviser to the Royal Siamese Government; then I taught tropical medicine at Tulane; private practice followed by World War II. During World War II, I was in the Balkans; in fact, have been pretty much everywhere and Albuquerque has the most salubrious climate of them all – come on out and visit God's country."

Dick Bailey is too modest. He's still interested in M.I.T., 1915. From 115 Woodside Avenue, Narberth, Pa.: "Much as I would like to attend the 35th reunion, I find that I cannot be there. I am, as you may or may not know – and no reason why you should remember – also a member of the Class of 1910 of Williams College, a tidy institution at the other, or higher, end of the Commonwealth of Massachusetts. This June our 40th reunion takes place the 15th to 18th of June and I expect to be there. I cannot, for business reasons, attend them both. Maybe after I retire I can get someone to push the wheel chair from Cape Cod to Berkshire County, as then I will have the time. But this year Eastern Massachusetts' loss will be Western Massachusetts' gain, if I may talk like Harry Truman, and with his humility. Herb Anderson wrote me a fine letter about the reunion and he had a very good argument. He lives so close to me that I practically never see him, so please tell him I very much appreciate his effort as your loyal lieutenant. I know the reunion will be as inspiring and rejuvenating as the past ones have been and I do regret that the five-year period between graduation from Williams and Tech should at times like these offer such a real deterrent to my participating in all the class reunions I am qualified to attend. With my very best wishes for a grand and most successful reunion!"

You'll all be glad to read Harold Colby's cheerful report on his recovery. From 71 Waldeck Road, Milton, Mass., he writes: "After a very rough time just a year ago with that session with coronary thrombosis, I am gradually improving as you well know from our occasional talks on the phone. Your continual contact with the house during my illness, and since, is indeed appreciated. I am still working but a half-day each day, except one, which is a full day each week. It is hoped that the doctor will grant a little more time at the office after my next check up. Madeline and I are now keeping house alone, just as we did 32 years ago. The children are both married and have their own homes. Walter and his wife, Phyllis, and our granddaughter, Sandra Louise, live in South Braintree. It is near enough so that we can see them quite often. Virginia was married last October and with her husband Bob Moodie, lives about a mile from us. It is much better than having them miles and miles away. I was glad to see Frank Scully when he visisted me at the office a while ago. It was nice to have a chat with him. Did I ever ask you to thank the boys at the class dinner for the card that all signed and which you sent to me while I was on the sick list? It surely was encouraging and I appreciate your thoughts."

Although Clark D. Abbott feels his first allegiance is to Cornell, he does tell something about himself from 1146 Standard Bank Building, Cleveland, Ohio: "I have recently completed my 30th year with the Factory Mutual Engineering Division (associated Factory Mutual Fire Insurance Company). Since 1930, I have endeavored to manage the Cleveland, Ohio, District Office. Happily married since 1918, we have put our three children through their chosen colleges, married them off and are now welcoming our grandchildren as they appear!"

It is sad to close this year's class notes with the record of the passing of our classmates: Charles S. Bouchard, 37 Avon Road, Wellesley, Mass., died on January 31; Kenneth Huse, 176 Edgemere Drive, Rochester, N.Y., died on February 4; William H. Gabeler, 2603 Cleveland Heights Boulevard, Tampa, Fla., died on April 29. To the families of these departed classmates go our deep and sincere sympathy in their losses.

And to close this year, Azel thanks you all – every one – who has answered the class slogan, "help Azel!" – AZEL W. MACK, *Secretary,* 40 St. Paul Street, Brookline 46, Mass.

• 1916 •

Phil Baker sent a welcome newsy letter. He had just returned from several weeks' visit in Europe with his wife and daughter. They visited Portugal, Italy, France and England. "While in Portugal, I had the pleasure of a very delightful visit with Joao Correia, Class of 1916, who is now a heating and ventilating engineer in Lisbon, Portugal. There is a city that is something like a book out of Hollywood with its magnificent setting and colorful homes. Mr. Correia has a very nice town home and a very delightful summer residence up in the hills. His wife speaks about five languages very fluently. It seemed to me that things were quite normal with everything available there as here, at a price." Phil must have had an interesting trip and we appreciate his taking the time to write a letter telling us about it. – Professor Murray P. Horwood presented a paper on "Sixty Years of Progress in Sanitation" before the 60th anniversary meeting of the Massachusetts Public Health Association on April 25.

Bill Farthing, our President, recently suffered the shocking tragedy of having his only son killed in an automobile accident. Words are indeed inadequate at a time like this but Bill knows how we all feel.

It certainly is not our intention to ape radio but we will have to incorporate a mysterious theme. We received the following letter with no signature, on plain white paper; and at the time of going to press, we had not been able to determine who it is from. Hope after seeing it in print, whoever knows the answer will clarify the situation for us by letting us know who sent it in. "In discussing the 1916 class notes that you published in the April Review, some of us noticed your remark that Herb Gfroerer ought to be in *Who's Who in America,* if he wasn't. This led to discussion and conjecture as to how many of the old class were in *Who's Who* 34 years after graduation. My secretary having some slack time, I borrowed a *Who's Who in America,* Volume 26, 1950–1951, from an attorney down the street, gave her the M.I.T. Alumni Register, 1948, and told her to check the class register of living 1916 members therein against *Who's Who* and let me have the results. She handed me the attached list just before I left the office on this trip, therefore, so I have had no time to analyze the results except to wonder how the Course IV architects can run the true engineers (electrical) so close and leave the rest so far behind in percentages. It would be intersting to know how 1916 appears in comparison with other classes both in *Who's Who in America* and in the much broader classifications of *Who's Who in Engineering* – but someone else can do that – I have not the time. The group sends this to you thinking it might be of

interest for your class notes. I will call you if and when I get east of New York and near the State House dome but right now I have to catch the rest of the crowd." Thus ended the letter. The list attached to it was both interesting and informative.

In addition to your Secretary, the following members of the Class gathered for breakfast preceding the meeting of the Committee on Financing Development which was held April 22. Albert Lovenberg, Steve Brophy, Joe Barker, Steve Berke, Jack Heller, Izzy Richmond, Jack Camp, Earl Townsend, Dina Coleman, Sandy Claussen, Joe Minevitch, Nat Warshaw and Harold Russell.

Last winter when we passed through Charleston, S.C., we had a chat with Samuel Lapham, who promised that he would send a few paragraphs for the notes. Only recently Sam was contacted again in line with our regular schedule for inducing the boys to write, and now he has come through with the following letter which we appreciate very much: "Upon return from the 25th reunion, I found I had been promoted to lieutenant colonel in the Army Reserve Corps. I was not called to active duty immediately after Pearl Harbor as my firm was architect for a million dollars' worth of permanent construction at the Marine Barracks, Parris Island, for the Navy. When this was finished in 1942, I entered on active duty at Headquarters, Fourth Service Command, where I served in the office of the inspector general of that command. In January, 1943, I was permanently detailed in the inspector general's department and made assistant inspector general of the 4th Service Command. As such, I inspected troops, camps and stations in the six southern states east of the Mississippi as well as carrying on investigations of a confidential nature. I had the excitement (and difficulty) of entering Oak Ridge for an inspection by order of the inspector general of Washington at a time when its existence was unknown outside of its immediate vicinity. My work as an inspector general went on for three years and I was promoted to full colonel in 1945. I returned to civilian life in 1946. During these war years, I had one son killed and another born. Our architectural partnership was reopened in 1946 and this July we will have been in existence as a firm for 30 years. Since the war, we have completed the most modern airport terminal building south of Washington and now have a six-hundred-thousand dollar war memorial building under construction for the Navy Department. My daughter graduates this June from the University of Rochester, B.S. in Physics and Phi Beta Kappa. She will take her master's degree with a teaching fellowship at Duke University. Hope I can make the 35th reunion but trust that you can turn out more architects than attended the 25th."

Your Secretary modestly reports that he has been elected as the Alumni Council representative for the Class of 1916 for a five year term beginning July 1, 1950.

And we have another letter from a classmate who is a welcome addition to our list of new correspondents, so far as our recent 1916 notes are concerned. This comes from William F. Howard in Walla Walla, Wash., on a letterhead that indicates he is secretary of the Board of the Walla Walla, Wash., public schools. He writes: "For a number of years I was associated with one of the largest mining companies in the West, the Bunker Hill at Kellogg, Idaho. In 1934, I came back to my old home town to put my daughters through college. For the past 10 years I have been employed as business manager of the Walla Walla public school system. In this state the accepted title for the position is secretary to the Board. It involves the supervision and maintenance of three and a half million dollars' worth of property and the purchasing of all school supplies as well as, in my case, some design and building on the side. Our operating budget for the next year has just been estimated at $825,000 more or less. One daughter married a man from Oregon State in 1942. Her husband, after serving in the Navy three years from Guadalcanal to Tokyo, is now connected with the Portland General Electric, Portland, Oregon. The other daughter has been with the hospital division of the Veterans' Administration at Denver and Portland for several years. I, like some of the other older members of the Class, am approaching what a lot of people like to think of as the retirement age. However, I hope to work some years yet. A number of the names on the 1916 letterhead are quite familiar and it would be a pleasure to see some of you again. However, unless some business trip or convention should turn up, it is unlikely that I can get so far east. Harold Crawford of the Class of 1913 who lives here has been back twice in the past 10 years.

And still another new correspondent, Edward R. Hall, responded nicely to our recent request for a few lines as follows: "I am still connected with Koppers Company, Inc., Metal Products division as vice-president and assistant general manager. On September 11, 1948, I married Cushing Marshall Gardner and at the same time acquired three stepchildren. Bill Gardner, the oldest one, is now in his first year at M.I.T. John, age 15, and Edith, age 13, are attending school in Baltimore."

Before we sign off until November, we do want to remind you again of the reunion dates, June 8, 9 and 10, 1951. These are going to be "red letter" days. Hope none of you will have to miss them for reasons of sickness or accident. As far as business is concerned, you know far enough ahead to arrange your affairs so that nothing will interfere. The dates are definite and it will be stag. To all of you go our best wishes for a pleasant summer. Be sure to write to us in the fall and tell us what you did on your vacation. — RALPH A. FLETCHER, *Secretary*, Post Office Box 71, West Chelmsford, Mass. HAROLD F. DODGE, *Assistant Secretary*, Bell Telephone Laboratories, 463 West Street, New York 14, N.Y.

• 1917 •

Not only is Ray Blanchard now president of the Hood Rubber Company in Watertown, but news of another presidency has come: The election of J. S. Ellithorp, Jr., as president of the Beech-Nut Packing Company in Canajoharie, N.Y. Like Ray, he has been with his company since 1917, becoming vice-president in charge of manufacturing in 1938, and executive vice-president in 1949.

Benjamin Slocum Wells died on April 26 in Berkeley, Calif., after a long illness. For many years, he was traffic manager for the American Bell Telephone Company at San Francisco, having moved to California shortly after graduation. — Stephen J. Markham, Jr., died on April 19 in Fitchburg, Mass. He was the owner of S. J. Markham and Son, insurance office, and is followed in the business by his son, Stephen J. Markham, 3d.

Your Secretary spent several days in Mexico City this past spring and had an enjoyable luncheon with members of the M.I.T. club there. Although he met no one from the Class, he was pleased to meet members of the "Technology Associates" — a group of M.I.T. graduates who have banded together to form an engineering consulting association. As usual, the ubiquitous Lobby had been there a week before him.

The Class stands at 120 per cent of its quota on contributors to the Alumni Fund, with 90 per cent of the contribution quota filled. It is good to see that so many of the Class maintain their active interest in the funding of the Institute's independence. — RAYMOND STEVENS, *Secretary*, 30 Memorial Drive, Cambridge 42, Mass. FREDERICK BERNARD, *Assistant Secretary*, 24 Federal Steet, Boston 10, Mass.

• 1918 •

In the year of terror 1918, colleges were in an upheaval which disrupted many a student career in the general turmoil. So it was that Edward B. McCarthy did not graduate with us though he belonged to our ranks. Near the end of April, Colonel Edward B. McCarthy took over as post commander at Fort Devens on arrival from Fort Adams, R.I., his former command. The 7th Infantry Regimental Combat Team put on a review at retreat ceremonies to welcome the new commanding officer, who is a native of Scituate and who served as a coast artillery officer in Portland, Maine, and at Fort Banks. He served in France in December, 1917, until June, 1918, and was an instructor at the Coast Artillery school at Ft. Monroe, Va., in 1919. He has also served at Boston in the Harbor Defenses as well as in Washington, D.C. Colonel McCarthy in 1948 and 1949 was senior American Member of the War Crimes Tribunal in Tokyo. Prior to going to Devens, he served as commanding officer of the harbor defenses at Fort Adams. — Lester C. Conner, who did a thesis on "The Electrolytic Oxidation of Aneline," driving the horses which run down wires from a dynamo with a hand both keen and sure, has been made director of research for the Bryant Chemical Corporation. They have recently expanded their research and development with a modern laboratory at Hingham. Conner was formerly chief chemist for Masury-Young Company of Boston. For 10 years before that, he was a research chemical engineer with the Pacific Mills at Lawrence.

By devious routes, involving couriers in China, ships on the Pacific Ocean, trains and postmen in America, as well as the thoughtful sharing of Pete Sanger, we have a letter, already an honorable year old, from C. Y. Chen of Mining Engineering and Hsiang-tan, China. Chung-Yang says in part: "Your kind letter dated September, 1948, forwarded from the Tien-Fu Mines, Szechwan, was received yesterday afternoon with great appreciation and pleasure. It took four months' journey around the world to its final destination, with a narrow escape from being lost. A letter from an old friend, after 30 years separation, reading together with my wife, in front of a fireplace, conduced very much to the reminiscences of my good old times in the States and M.I.T., as it were, in series of pictures in cinema.

"In the fall of 1918, I attended the Columbia University and worked for master degree under Professor Peele. After making extensive inspection trips to the coal mines in Pennsylvania, and Virginia, copper mines in Michigan, Negaunee mine in Marquette Range, Mich., and nickel mine in Sudbury, Canada, I returned to China in October, 1920. The first job they offered me in January, 1921 was a very interesting one. They assigned me a new concession of a coal mining company in North China (Lin-Ho-Kon Mining Company, Honan). I started shaft sinking and stone lining, headframe and cage designing, machinery installation, surface and underground arrangements, light railway and endless ropeway construction, and so on. I completed in two years' time and gradually brought up the output to 1,500 tons a day. I stayed there nine years in which I got a quite broad training and experience in the coal mining engineering. In 1928, I was summoned by the Reconstruction Commission of the National Government to prospect and locate some new coal mines along the Huai River, in Anhwei province, Central China. In May, 1929, I was appointed as chief engineer to start the Huai-nan Mine in that region.

"I shifted my job in January, 1931, to the Tientsin-Pukow Railway (a line from Nanking to Peking) as chief storekeeper, at a request of a friend of mine, who happened to be the managing director of that railway. In 1935, I joined the National Resources Commission in the capacity of mining specialist to look after the tungsten mines in Kiangsi Province. You know the southern part of Kiangsi is very richly mineralized in wolframite, scheelite, cassiterite, stibnite and molybdenite. Traveling quite extensively in that region for prospecting, together with a party of geologists, finally, we decided on three localities as our principal producing districts. We opened the mine, and improved the old workings from the manual labor to the mechanized state. At the same time, the Sino-Japanese War broke out and, unfortunately, in the winter 1937, the capital of Kiangsi fell to the enemy. After two years of hard work, I had to wind up my business and retreat whole of my working force westward to Szechuan Province. I was again appointed by the same commission in May, 1939, to charge a gold mine in North Szechuan.

"In September, 1939, I shifted my post as the general manager of the Tien-Fu Mines, Pepei, very near Chunking, our war capital. It was an old native mine with no machinery, no pump, no hoist, and no ventilator – all depending upon the manual labor in a very primitive way with a small daily output of 80 tons. By that time, our war capital was badly in need of coal. The first thing we did was to set up a small electric power station about 800 kilowatt capacity. Although it is small, it is big enough to electrify the whole mine. Remember it was in wartime, we were short of materials, metals, and machinery, yet through our long and continuous effort and struggle, we increased the output to 1,500 tons per day. We built up modern living quarters for staff and labor, hospitals and wards, bathrooms, schools, atheletic fields, gardens and good roads, and so on. You shall agree with me that it is really a modern mine if you come and see it.

"Four months after the V-J day, in January, 1946, I was appointed by the Ministry of Economics as special commissioner to Manchuria to take over Fu-Shun Mine – the biggest and best equipped mine in Manchuria – from the Japanese administration. The open pit is supposed to be the largest in the world, even larger than that of the Misabee Range. Its daily output had reached its highest peak of 45,000 during 1939–1942. Later I was appointed as the president of the administration. In the spring of 1947, another good coal mine named Si-An, with a reserve of 200,000,000 tons, and with a daily output of 8,000 tons, well equipped and well managed, I was asked to take over from the Japanese hand, and appointed to be the president of that administration. Remaining on the post exactly eight months and as the Communist army pushing southward, I had to retreat. At present, I am the president of Hu-Hsiang Mine, in Hunan province, Central China. It is a new, but small mine with coal reserve of 30,000,000 tons, just started last spring. The daily output is only 120 tons. I am confident it will grow and be prosperous as the time goes.

"As to my family life, I think you are interested to know. I was married in February, 1921, and a boy was born in October, 1922, and another one in November, 1923. These two boys are all grown up now and graduated in the Chinese University, and both got married lately. I expect to be grandpa this year. Unfortunately, my first wife died in July, 1941. In 1943, I met a lovely girl of my own state, a returned student from Michigan Univ. and married her in May of that year. A girl baby was born to her in April, 1944 and a second baby I expect sometime in April this year. I still keep on smoking cigarettes and pipes, but no cigars. I used to play tennis and do little swimming, but now I feel a little bit too old to these games. In my leisure hours, the *Reader's Digest* is my favorite. But due to the restriction on the foreign remittance, even that is hard to get. I am not interested in politics and cannot give good opinion about the subject. Anyway, our political world is all in mess. Apparently, the communists will win the war. Moreover, our monetary system is also no good, and the living index is hovering higher and higher everyday. We dare not imagine what result it will amount to. Poverty, misery and starvation, perhaps!"

I have had a bit of high adventure myself after a most strenuous job keeping things going at The Thomas School during a year of being on call practically 24 hours a day. On March 16, I flew to Germany to visit Colonel J. Worthen Proctor '17 and family for two wonderful weeks. The first week we traveled every day out from Frankfurt and then, as Worthen was to be away for a couple of days the second week and we could not have a driver, I decided suddenly that I would fly to Berlin, and spend three days there. My whole trip, from the time I left New York, until I returned to New York, was a grand success. I am thoroughly sold on flying.

Edward John Scannell was already an M.D. and 20 years older than most of us, when he joined our Class as a special student. He had been a medical officer in the Spanish-American War, and, subsequently, saw similar service in World War I. Later he studied tropical medicine in South America. This was a logical consequence of the fact that he had been in Panama in 1905 with United States Surgeon General William C. Gorgas during the building of the Panama Canal, working on the yellow fever problem there. In 1906, he had done research work for the Brazilian Government in the Amazon valley and in Spanish Honduras. Dr. Scannell directed the United Fruit Company hospital in Cuba in the early 1920's. He also worked with the John D. Rockefeller Foundation for the eradication of yellow fever and was on the staff of the New York City Hospital for six years working on problems of the Rockefeller Foundation's Yellow Fever Commission. He retired in 1928 but soon after was called in by the Mexican Government for tropical disease work and then rendered service to the Brazilian Government and several African colonies. In 1932, he was appointed to the Veterans Hospital in New York City, a post he held until June, 1945, when he retired once again. The next year he came out of retirement a second time to serve at Fort Bayard, New Mexico, as consultant for yellow fever and tropical disease care of Army patients. He retired a third time in 1947 to take up permanent residence in East Andover where he had kept a summer home for the past 21 years on the Thornton Hill Road. April 11 he died, aged 74, leaving behind a reputation as one of the country's foremost experts in tropical medicine and as a world-renowned specialist in yellow fever. – GRETCHEN A. PALMER, *Secretary*. The Thomas School, The Wilson Road, Rowayton, Conn.

• 1919 •

Dean K. Webster, Jr., writes: "Our feed manufacturing business continues to grow and we are adding a $300,000 train loading shed with conveying system this year at Richford, Vt. My son, Dean, 3d, will be a senior at Williams College next fall and is president of his fraternity, Delta Phi. My daughter, Joan, is at Vassar College. My hobby is golf, always tickled

to break 90." – David C. Sanford, Jr., writes that his elder son, David, III, will be graduated from Yale this spring as "Industrial Engineer."

John Stevens advises that a splendid dinner meeting of Alumni was held in Wausau, Wis., recently in behalf of the Development Program with Professor Schell as the main speaker. Movies of M.I.T. were shown and enjoyed by all present. After 25 years, John visited the Institute with his son last fall and renewed many of his old acquaintances which, needless to say, was quite a thrill. He also added in his note that he runs into Bob MacMullin quite frequently.

Jim Strobridge writes that he is still vice-president, his company having offices at 250 Park Avenue. He is still a director of the Lithographic Technical Foundation and committeeman of Boy Scout Troop 404. – Phil Dinkins advises that Howard McClintic, Jr., is still active in the construction business with J. K. Ferguson Company and that things are going very well with him.

Your Secretary, as you no doubt have noticed, has moved with The Lummus Company from 420 Lexington Avenue to their new offices at 385 Madison Avenue, between 46th and 47th streets. This is only a few blocks from Grand Central so that classmates who are passing through New York can still easily drop in to Room 305. – EUGENE R. SMOLEY, *Secretary*, The Lummus Company, 385 Madison Avenue, New York 17, N.Y. ALAN G. RICHARDS, *Assistant Secretary*, Dewey and Almy Chemical Company, 62 Whittemore Avenue, Cambridge 40, Mass.

• 1921 •

The appearance of this, the last number of the current volume of The Review, is a reminder that our 30th reunion is less than a year away. Irv Jakobson and his reunion committee are not yet ready to reveal the plans for next summer but he says that an unusually good time is in store for all of us. Jake hopes that everyone will plan now to include the reunion in next year's itinerary. Since next Alumni Day has been established for Monday, June 11, 1951, a longer and more complete program can be arranged than was possible in previous years.

Walter C. Sadler is accorded a most complimentary review in the hundred-year-old English engineering weekly, *The Engineer*, for his book entitled *The Specifications and Law on Engineering Works*, published by John Wiley and Sons, Inc. The lengthy article says, in part: "The author modestly refrains from stating on the title page that he is professor of civil engineering at the University of Michigan, which conferred the degree of LL.B. upon him. Nor does he tell us he has a B.S. from the University of Illinois and an M.S. from M.I.T. In the first chapter he draws attention to questions bearing upon the rights of property owners to which the engineer must have regard and also emphasizes the importance of technical knowledge to the lawyer. Indeed it would seem that those who employ a constructional engineer on the other side of the Atlantic expect him to know much that in England is left to members of other professions. Having set forth certain forms of contract, the author discusses legal (and illegal!) matters of great concern to the engineer and then deals generally with the law of contract. He discourses on agency, partnership, corporations, sales, patent rights and workmen's compensation. He sets forth the various branches of the law with which the engineer should make himself familiar and devotes remaining chapters to the civil or Roman law, the English legal system and the legal system in the United States. The engineer confronted with the task of framing a report upon which the terms of a contract for some vast undertaking are to be based will derive much valuable instruction from Professor Sadler's pages."

Fred M. Rowell, General Manager of the Plymouth County Electric Company and the Plymouth Gas Light Company, has been elected vice-president and general manager of the Cape and Vineyard Electric Company and was re-elected a director of the latter company, according to an announcement in the Cape Cod *Standard Times* of Hyannis, Mass. Fred started his utility career in 1922 as a distribution engineer for the Plymouth County Electric Company and served both this company and the Plymouth Gas Light Company in various capacities before becoming general manager in 1946. He served in the Army in World War I and was a lieutenant commander in the Navy during the last war. He has been active in civic and community affairs and is currently chairman of the board of investment, vice-president and a trustee of the Plymouth Five Cents Savings Bank. He is a former president of the bank, the Jordan Hospital, the Plymouth Rotary Club, the Plymouth Country Club and the Old Colony Club. He is married and has a son and daughter.

Leonard R. Janes is a coauthor with colleagues at the Public Service Company of Northern Illinois of a paper entitled "Interrupting Ability of Horn-Gap Switches," which was presented at the June meeting of the American Institute of Electrical Engineers in Pasadena, Calif. The John G. Lee family of Farmington, Conn., continues to make the headlines. Mrs. Lee, active in the Connecticut League of Women Voters, has been nominated for national president of the League. William F. Kennedy of Bethlehem Steel Company is active on the Metals and Minerals Committee of the New York M.I.T. Financial Development Program. Stanley L. Scott, a major general, advises that he has returned to Washington where he is assigned to the Office of the Secretary of Defense. Addresses have also been received for James R. Cudworth, Norwood P. Johnston, Philip A. Nelles, Jr., Michael Treschow, Joseph Wenick and David P. Wheatland.

Saul M. Silverstein, President of Rogers Corporation and Vice-president of the First National Bank of Manchester, Conn., reports that he attended the conference of Business Public Relations Executives in New York along with Charles A. Williams, Vice-president of the United Illuminating Company, New Haven, Conn., and Marshall G. Munce, Assistant to the President, York Corporation, York, Pa. Present at the smoker of the M.I.T. Club of Northern New Jersey in honor of President Jim Killian'26 were Mor Aronson, Sumner Hayward, Fred Kowarsky, Harold Stose, Joe Wenick and your Secretary. The New York *Herald Tribune* carries an announcement of the engagement of Ethel Curran of West Orange, N.J., to Frederick W. Adams, Jr.,'50, son of Dr. and Mrs. Frederick W. Adams of New York City. Young Fred is an architect associated with Fellheimer and Wagner. E. Stanley Lockwood is division superintendent of Public Service Electric and Gas Company in Jersey City, N.J. Stan and Mrs. Lockwood have a daughter, Patricia, and make their home in North Bergen, N.J.

Lawrence W. Conant, Head of the Spare Parts Division, Office of Chief of Engineers, Washington, D.C., is the subject of an illustrated feature article in the Washington *Times-Herald*, praising his work for boys. A former baseball player, camp counselor and Scoutmaster, Larry is credited with having started the "perfect father-son outfit" in the form of the Cleveland Park Dad and Son Athletic Club, organized in Washington in 1934. Says feature writer John White: "In the first place, it is strictly father-son, no boy can join unless his old man does too. In the second place, the pappies are expected to take an active part in club doings. They coach. When the boy decides what position he wants to play on the team, the father is trained by Conant and his staff of paid coaches in the intricacies and strategy of playing that position and he then coaches his son. They watch practice at least twice a month. They play themselves, – yes indeed. . . . As for the boys, well who wouldn't like the chance to play and work and just spend time with Dad? Those youngsters roar along through the five grades Conant has set up – scrub, sub, regular, varsity, all-American – and you may be sure plenty of proud parents come out for Saturday arm-band awards. Larry Conant has done a wonderful thing."

Robert J. Lawthers, Manager of the Benefit and Insurance Trust Department, New England Mutual Life Insurance Company, Boston, has as his avocation the job of technical director of the New England Opera Theater. Bob, who was headed for journalistic honors via *The Tech* during our early days (or nights) at the Institute, is an ardent opera enthusiast whose chance meeting with the director of the operatic group has led to a close association. Referring to last year's successful fourth season at the Boston Opera House, the Boston *Globe* says of Bob: "A tireless worker and a valued colleague, he has assisted the conductor in the first American productions of 'Idomeneo,' 'The Turk in Italy,' 'Albert Herring' and on a Boston premiere, Gluck's 'Iphigenia in Taurus.' Love for music and theater is in the Lawthers family. His wife, Barbara, is the scenic supervisor. She is also a stage designer and devised the sets for 'Don Giovanni,' 'The Marriage of Figaro' and other productions."

Many members of the Class are active in various Institute and Alumni Association affairs. Warrie Norton is an Alumni Term Member of the M.I.T. Corporation, a member and former chairman of the Alumni Fund Board and on the Alumni Council as a former president of the Alumni Association. Mel Jenney, Frank Kittredge and Jack Rule are members of various Alumni Association committees. Josh Crosby, Frank Kittredge, Lark Randall, Ace Rood and Jack Rule are representatives on the Council for local clubs from Maine to Monterrey. Chick Kurth is our Class Representative and Lark wears two other hats as our very successful Class Agent and as a member of the Advisory Council for Undergraduate Publications. Bill Stratford and Charlie Herty, Jr., serve on the Departmental Visiting Committees for Courses V and X, respectively. Eleven men are officers of as many local alumni clubs. Seven of these are presidents: Whit Spaulding, Baltimore; Jack Barriger, Chicago; Bill Loesch, Cleveland; Willis Bugbee, Jr., Detroit; Ed Praetz, Lawrence and Lowell; Gene Weil, St. Louis; and Lark Randall, Wellesley. Irv Jakobson and Sumner Hayward are vice-presidents of their respective New York and New Jersey clubs. Joe McEvoy is secretary in Houston; and Glenn Stanton is secretary-treasurer in Portland, Ore. Honorary Secretaries appointed by the President of the Institute as "Ambassadors of Technology" include: Harry Field, Hawaii; Ed Farrand, Chicago; Whit Spaulding, Baltimore; Wint Dean, St. Paul; Cac Clarke, Munnie Hawes, Sumner Hayward, Ed Lockwood, New Jersey; Irv Jakobson, New York; George Welch, Poughkeepsie; Bill Sherry, Tulsa; Glenn Stanton, Portland, Ore.; Charlie Herty, Jr., Bethlehem; Simon Freese, Fort Worth; Gene Rudow, Seattle; Charlie Manneback, Belgium; Helier Rodriguez, Cuba.

It is with deep sorrow that we record the death on April 23, 1950, of Melvin Charles Rose of Catonsville, Md., and extend sincere sympathy to his family on behalf of the Class. Mel, who was chief engineer of the Chesapeake and Potomac Telephone Company of Baltimore City, suffered a heart attack and passed away the following day at a Baltimore hospital. Born November 6, 1900, he attended New England schools and prepared for M.I.T. at Mechanic Arts High School, Boston. At the Institute, he was on the crew, a member of Lambda Chi, and active in the Aero Club, the Naval Architecture Society and on the editorial board of *The Tech*. On receiving his degree in Course XIII, he entered the telephone business in Washington in 1921 as a student engineer in the general engineering department of the Chesapeake and Potomac Telephone Companies. When a general engineering organization was established in Baltimore in 1929, he went there as outside plant engineer. In succeeding years he was transmission and outside plant engineer, district plant manager, general plant manager and assistant general manager before he was appointed chief engineer in 1946. He was responsible for planning and direction of the postwar expansion and building program throughout the state of Maryland. He was a member of the Engineers Club of Baltimore, the Telephone Pioneers of America, the M.I.T. Association of Baltimore and the American Institute of Electrical Engineers. He was recently elected to the executive committee of the Maryland Section of the latter organization and he was active as an Honorary Secretary of M.I.T. in the Baltimore area. He was married to Beatrice Smith of Catonsville in 1923. Besides his wife, he is survived by twin daughters, Mrs. Charles L. Ferkler of Pikesville, Md., and Mrs. Robert C. Holland of Essex, Md., a son, Melvin C. Rose, Jr., at home, two sisters, Mrs. Charles A. Davis of Saugus, Mass., and Mrs. James E. Mercer of Colbrook, N.H., and four grandchildren. We are indebted to Irv Jakobson and to Mel's associate in the Telephone Company, Sidney C. Miller, for assistance in preparing these notes.

Alumni Day, 1950, is just around the corner at this writing and a formal record of our participation in the day's events will have to await the November issue. Ray, Chick, Jake, Lark and your Secretary wish you all a very pleasant summer. — CAROLE A. CLARKE, *Secretary*, International Standard Trading Corporation, 67 Broad Street, New York 4, N.Y.

• 1922 •

Lester Clark Lewis, Minister of the Unitarian Church in Brockton, Mass., has been named acting director of the Home Projects Department of the Unitarian Service Committee, Inc., in charge of its work camps for the 1950 season. This group will sponsor a junior work camp for teen-agers at the Boston Children's Aid Association camp in Cohasset, Mass., as well as projects for college-age groups near Ensenada, Baja Calif., and in a Minnesota mental hospital.

Jeanne Munning, Gus Munning's daughter, was awarded, last April, the Edith Burtis Scholarship for $100 as first prize in a contest sponsored by Advertising Women of New York, Inc., for the best hosiery advertising campaign submitted by young women advertising careerists. Miss Munning is an assistant in the promotion department of O'Mara and Ormsbee, national newspaper representatives in New York. — Florence W. Stiles has moved from Bar Harbor to Belfast, Maine, where she has opened an office for the practice of architecture, and has been visiting the Institute recently in connection with her work.

Milton M. Manshel has been elected president of Congregation B'nai Jeshurun in Newark, N.J. Milt was formerly treasurer of the Congregation. He is also vice-president of the Jewish Child Care Association of Essex County, N.J., and was formerly secretary and vice-president of the Jewish Children's Home. He is a charter member of the board of the Jewish Vocational Service and has served as president, vice-president and treasurer of that organization. He is vice-president and treasurer of the International Ticket Company of Newark and lives in West Orange. — Stanley M. Ryerson, one of our architects whose avocation is painting, was among those artists whose work was exhibited in the 23d annual exhibition by the Business Men's Art Club held last April at the Paine Furniture Company in Boston.

Captain J. Ross Allen, a graduate student in the Class of '22, died on April 20 at his home in Drexel Hill, Pa., at the age of 53. Captain Allen was director of the Naval Air Experimental Station in Philadelphia at the time of his retirement in 1949. He had been in naval aviation since 1925. Surviving him are his widow, a son, J. Ross Allen, Jr., and his father, Charles H. Allen of Australia, to whom we extend our sympathy.

New addresses: Harold O. Berry, 168 Winthrop Street, Taunton, Mass.; Randall J. Hogan, 11 Quidnick Road, Waban, Mass.; Lachlan MacKenzie, Park Lane, 299 Park Avenue, New York City; Albert H. Pierce, 2606 Fairmont Street, Dallas, Texas; Florence W. Stiles, 74 Union Street, Belfast, Maine; Floyd J. Wilson, 1158 Columbia Avenue, Ontario, Calif. — C. YARDLEY CHITTICK, *Secretary*, 77 Franklin Street, Boston 10, Mass. WHITWORTH FERGUSON, *Assistant Secretary*, 333 Ellicott Street, Buffalo 3, N.Y.

• 1923 •

These notes had to be written too far in advance to report on any members who showed up for the annual meeting of the Class on Alumni Day. The meeting was the first annual meeting of the Class under its new constitution. — A clipping from the Beverly, Mass., *Times* reports that Leslie W. Powers has moved to the West Coast where he will be Pacific Coast manager for the Buffalo Fire Insurance Company of which he has been secretary for the past six years.

A card to the Alumni Office reports that Edward B. Maynard was killed in a plane crash in March. He was with the Petroleum Heat and Power Company, Mineola, N.Y. — HORATIO L. BOND, *Secretary*, National Fire Protection Association, 60 Batterymarch Street, Boston 10, Mass. HOWARD F. RUSSELL, *Assistant Secretary*, Improved Risk Mutuals, South Broadway, White Plains, N.Y.

• 1924 •

C. Martin Cornish, Jr., M.I.T. '50, eldest scion of the C. Martin Cornishes of Mexico City, distinguished himself recently. With a fellow classmate, he represented the Institute at the National Intercollegiate Bridge Tournament held in Chicago in April, came home with a large silver trophy. They had been ranked second nationally after winning the New England eliminations, became national champs by beating the University of Minnesota pair in the finals. Young Nish graduates this spring as a food technologist, but evidently is also up on his theory of probabilities.

On May 23, a gala affair at the University Club in New York attracted a goodly number of '24 men. Billed as a "Re-Re-Re-Union" under the personal direction of Wink Quarles and Pret Littlefield, it served as a warm-up for Alumni Day in Cambridge. Bill MacCallum presided at the projector, ran off a good deal of footage taken last June by Nate Schooler and

Wink. The audience: Perry Maynard, Paul Cardinal, Walt Gress, Art Kemp, Bill Correale, Elkono Honigman, Tom Stevenson, Bill Blaisdell, Tom Bundy and Ed Wininger. Dr. McMahon stopped in for cocktails, couldn't stay for dinner. It was a good evening. We ought to have more of these around the country. — In late April, Ray and Mrs. Lehrer helped the Elmer Brugmanns celebrate their 10th wedding anniversary by stepping out at the Waldorf-Astoria. Imagine their surprise when they discovered, a few tables away, Mr. and Mrs. W. H. Robinson, Jr. The Robinsons had just returned from California, but it's not clear whether this was a honeymoon or just another of Bill's whirlwind tours around the country. At any rate, they held their own private reunion then and there.

The new president of the National Association of Home Builders is also stumping the country. In early May, Tom Coogan spoke to his Rhode Island contingent, about 400 of them. — Received from the Army, "For Immediate Release" (that was last April) . . . "Fort Monmouth, New Jersey — Dr. Martin J. Buerger, professor of Mineralogy and Crystallography, M.I.T., will speak at the fourth annual frequency control branch symposium next Wednesday and Thursday at Fort Monmouth. The noted professor will deliver a 'paper' on 'Synthesis of Nepheline.'" — Ralph Reid, with General Electric since his student days in VI-A, has been appointed section engineer responsible for lighting product engineering in the River Works, Lynn. — Otto Kirchner, long in Tulsa with American Airlines, has been transferred back east; now at La-Guardia. Otto, Jr.,'49, played a leading role at the Convocation last year, presented Churchill with a gold Beaver Key on behalf of the students.

FEATURE-OF-THE-MONTH: Going to Alaska this year? Then here you are, the latest travel information right from headquarters; that is, the Chief Engineer of the Alaska Road Commission, George M. Tapley. Just another example of the kind of service you fellows get. And if you're not going to Alaska, it still makes good reading. Tap went up there in 1948 when he heard there were big things afoot. There were. A very large operation was in prospect and everything was short — material, labor, engineers. "Stimulating," says Tap. He took his family with him and they're thoroughly settled long since in Juneau. The scenic part of his account deserves a better fate than these crowded columns can give it. For an engineer, he really goes overboard. And it will give you some idea of the size of his job to know that plans call for 70,000 tons of asphalt, that he built $2,000,000 of storage facilities for this one item and expects to save several millions as a consequence of not having it delivered in drums as theretofore. He has 300 miles of paving and 200 more of pioneer road construction through unbroken wilderness. But about travel under present conditions; after detailing the trouble his crews have with mosquitoes and bears on location, Tap goes on:

"Mosquitoes (or bears) are not a problem in any of the cities or along any of the principal highways. I normally travel from Juneau to the Interior by Pacific Northern Airlines (DC-3 daily service) to Anchorage, or by Pan American Airways (DC-4 twice a week) to Fairbanks. The former provides superb views of the Fairweather Range, Malaspina Glacier, St. Elias and Chugach mountains. All these features are spectacular in their size and ruggedness. The latter route views the panorama of the coastal ranges to Whitehorse, and after a brief call at this gold rush capital, the broad valleys of the Yukon and Tanana rivers are spread out as the plane follows the Alcan route into Fairbanks. A third method of travel to the interior is by Alaska Coastal Airlines (Grumman amphibians, daily service) to Haines and thence over the Haines Cutoff and the Alcan to Fairbanks by automobile. This is slower and more costly to the government; so we use this route only when inspecting the eastern extremity of the Alcan in Alaska, and only between May and November when the Haines Cutoff in Canada is kept open by the Canadian Army.

"As for the best way to see Alaska — if your time is short, it should by done by air or steamship to one of the gateway cities, probably Anchorage by air or Seward by water; thence over the Alaska Railroad to Fairbanks, by bus to Whitehorse, to Skagway by the White Pass and Yukon narrow gage railway, and south by air or boat. Such a trip requires careful advance planning and confirmed reservations as the hotels are inadequate and over-crowded. If you have a month or more to spend and a reliable automobile, the trip can be made over the Alcan one or both ways. As this is a 6,000-mile round trip from Montana to Fairbanks, I recommend it only to the most enthusiastic motorists. The road from Anchorage to Tok Junction on the Alcan is not recommended as 300 miles of this route is under construction this year." So there you are. If you're going to Alaska, it looks like the Alcan is certainly not the easy way! But if you do make it by air, water, or land, be sure and take Tap up on his invitation: "If any of the Class of '24 travels this way, let me know your plans and do not fail to look me up when in Juneau."

Thus ends this publication year. Hope you all have a good summer. Be back again in the fall with the belated news of our Alumni Day get-together. — HENRY B. KANE, *General Secretary*, Room 1-272, M.I.T., Cambridge 39, Mass.

• 1925 •

In about three weeks, as this is being written, the great trek to New London and Cambridge will start. Many of you who read this will have seen each other and will have exchanged newer and more personal news than will appear here in the July issue of The Review. Since the account of the reunion will not appear until the first fall issue in November, here are a few last items, not all cheerful, to tide you over the summer. Your Secretary has received two notices of recent deaths. Elmer P. Ripatte, of Dearborn, Mich., died on April 23. No details are available. A little more is available on Earl Edgerton, V, who died in March. The following appeared in the Boston *Herald:* "Funeral services for Earl Marsh Edgerton, 48, of Greenwich, Conn., an executive in the New York office of the Pacific Mills, will be held . . . in the A.E. Long Memorial Chapel, 4 Beech Street, North Cambridge. Burial will be in Mt. Pleasant Cemetery, Arlington. Mr. Edgerton, who died Sunday (March 26) in the Greenwich Hospital, was born in Rutland, Vt. He was a graduate of Somerville High School and Tufts College, and also studied at the M.I.T. He was a member of Soley Lodge, A.F. and A.M., Somerville, and Episcopal Church in Greenwich. Surviving are his wife, Mrs. Emily (Whitehouse) Edgerton, formerly of Arlington; two sons, Bradford Edgerton, a junior at M.I.T., and Earl M. Edgerton of Arlington." My recollection is that Earl attended M.I.T. only during his freshman year, although others may be more certain about this. I recall him as an above-average tennis player, although I believe he was not on the team. Our sincere condolences to his wife, parents and children.

Two items from Lowell papers refer to a talk by Willard Allphin, VI, before the School Building Planning Commission of that city on April 12. Without quoting extensively, it appears that Willard was able to bring before this group some salient facts about illumination in general, and fluorescent lighting in particular. He is listed as an illuminating engineer with Sylvania Electric Products, Inc., of Salem in the 1948 Alumni Register, although the firm name is not given by either paper. I believe that his first position after graduation was with General Electric at the West Lynn plant, and would be glad to have this confirmed. — The Lynn *Republican* mentions the appointment of Justin Peterson, VI-A, to the position of designing engineer at the River Works Division of G.E. He has been associated with the company since his graduation, including the period during which he received his S.M. degree in 1933. He makes his home at 54 Plymouth Avenue, Swampscott.

In addition to the Secretary's news, the Assistant Secretary has picked up some items of news due to his association with the reunion planning. Most of the information coming in indicates that certain of the Class cannot make the reunion and this information we have been sorry to receive. — George Oetinger, Jr., a lieutenant colonel in the Army Ordnance Department, writes us from Carbondale, Ill. He states that he has been utilizing his M.I.T. Commission continuously since August, 1939, and has three candidates for same, ages 14, 11 and 7. He is sorry he could not make the reunion because he is in the throes of shutting down an ordnance plant in southern Illinois and his executive officer has just entered a hospital. He wishes he could have the opportunity of seeing many of us at the reunion and to check how his thinning thatch stacks up with the others. — T. M. Lowe, Head of the Department of Civil Engineering at Alabama Polytechnic Institute, brings us up to date indicating that since '39 he has been at Auburn, Ala., and prior to that time, 1925 to 1939, was connected with the Department of Civil Engineer-

ing at the University of Florida. Tom and Mrs. Lowe would be happy to see any members of the Class who might be passing through Auburn.

William J. Schwarz of Cincinnati, Ohio, was in Boston recently for the first time in about 25 years and dropped in to my office for a few minutes. He is the owner of the Cincinnati Gold and Silver Refining Company which was established by his grandfather in 1880 shortly after he came to this country from Switzerland. Although Bill did not continue at the Institute and get his degree, he is a good loyal member of the Class of 1925 and I am sure he would be pleased to see any of the Class if they happen to be in Cincinnati. – A fine letter has been received from Irving Symonds explaining why he could not make the reunion. Sy is still with the American Metals Company and is in the process of moving back to Monterrey where he is supposed to take over three mills, build a couple more, be in charge of a research department and be the general manager's watchdog at the smelter. It sounds to me as though he is going to have his hands full for the next several months.

Ed Kussmaul will prepare a detailed report for distribution to those of the Class who have indicated they would like it. If you have not sent in the information requested in the first reunion mailing in January, won't you dig the reply cards out of the desk drawer and send them on immediately. – HOLLIS F. WARE, *General Secretary*, 106 Schuyler Road, Apartment 206, Silver Spring, Md. F. LEROY FOSTER, *Assistant Secretary*, Room 5-105, M.I.T., Cambridge 39, Mass.

• 1926 •

With this issue our class notes, along with The Review and your winter underwear, go into moth balls until fall. Therefore, we must get everything off the chest now, because what is news now will be history by next issue. I always like to get unpleasant tasks out of the way first, so I'll report the deaths of two classmates: Lucien J. Drapeau, I, of White Plains, N.Y., and B. E. Morris of Richmond, Va. By strange coincidence, both men died on the same day, November 21, 1949. For the Class, I extend deep sympathy to their families.

The news clipping services have turned up a few items of interest this month. *The Textile Recorder* of Manchester, England, ran a story on one Julius B. Goldberg with his picture and all – most of us know the story but the fellow we know is Jay Goldberg, who is research director for J. P. Stevens and Company, Inc. The article goes on to list the various organizations in which Jay is active. Congratulations, Jay, for the nice write-up and for the achievements which led to it. I happened to notice in a recent issue of the *Daily News Record* (a domestic textile publication) that Giles E. Hopkins, Director of the Wool Bureau, presided at a meeting sponsored by that organization in New York recently. I had lost track of Hoppy and was pleased to find this reference and not at all surprised to find him occupying an important position. Here's a clipping from the Wellesley *Townsman* about Brigadier General Robert C. Dean. Bob had just returned from a refresher course at the General Staff College in Ft. Levenworth, Kansas. To read the article, one would think that Bob's principal activity was in the Army, but he does happen to be one of Boston's leading architects. By the way, do any of you boys remember how Bob led the singing on the beach around a fire one night at our 5th reunion? Wouldn't it be grand if he would do the same at our 25th next year? I think you have an assignment, Bob!

Here's a news clipping from the Dallas *Times Herald*, which came to us because the name of Theodor Muller takes a prominent place as a designer. The particular article is about carpets, and Theodor hit the headlines by creating new designs for the Firth Carpet Company. He and his partner took first prize last year for furniture design in the American Institute of Decorators. No matter what field a '26 man enters, he seems to achieve success – great class, don't you think? Bob Dawes has sent in the Sunday supplement of the Worcester *Telegram* which also tells at great length of the artistic achievements of another '26 man, Richard A. Butler, who is owner of an outfit called Gothic Craft in Northboro, Mass., manufacturers of carved Gothic work for churches. The article tells about one job he and his 40 craftsmen have been working on for four years, so I don't imagine that Dick uses any production line or Course XV methods. As a matter of fact, he is an architectural graduate. You have no idea how educated your Secretary is becoming by reading about the achievements of '26 men and boiling it down for the notes. However, I still wish that one of our expert fishermen would tell me how to catch flounders, and big ones! That's the kind of education I really yearn for. One more clipping and we will be out of raw materials. This one refers to Leo Teplow who is associate director of industrial relations for the National Association of Manufacturers. The Class appears to be running the country's industry organizations, but that's not surprising. Leo, this time, was one of the leading speakers at the Virginia Industrial Management Conference – the article states that he joined N.A.M. five years ago.

A week ago today Larry Cumming dropped in for a few moments with his bride, Adelaide. Larry is still living in New York City but he likes Cape Ann and one can never tell when he may show up. He has promised to assist your Secretary this summer in laying out a television antenna at Pigeon Cove that will pick up Boston and still not require a 60-foot mast. Before signing off for the season, we want to remind everyone that just a year from now we will celebrate our 25th reunion and this is the reunion that counts most. Al Dolben, who is reunion chairman, will shortly get up full steam and the concrete plans will begin to come to you by special announcement. When the notes start up again in the fall, our principal subject will be reunion; therefore, any information you can send along this summer about your plans will fit nicely into the notes. Start now getting your old gang lined up for this once-in-a-lifetime affair and if anyone knows what became of the Pemberton Picnic movie, please speak up. I have always accused Flint Taylor of swiping it because it recorded his famous dive into the swimming pool, clothes and all. Flint says, however, that he would be happy to have the movie now to be able to prove to his friends that old man Taylor once had that much life in him. During the summer don't forget to send your Class Secretary at least a post card of your activities, and if you are in the neighborhood of Gloucester, drop in at Pigeon Cove for a hello. We are in the Gloucester telephone directory. – GEORGE WARREN SMITH, *General Secretary*, E. I. du Pont de Nemours and Company, Inc., Room 1420, 140 Federal Street, Boston, Mass.

• 1927 •

Many of you will have read in the eastern newspapers of the death of Joseph W. Hammond who was drowned on April 18 when three canoes of the Appalachian Mountain Club of Boston capsized almost simultaneously in the waters of Deerfield River near North Adams, Mass. Mary Jane Marston, his fiancee, was also drowned. Joe was a captain in the United States Naval Reserve and served in the Pacific during the last War. He was a senior engineer with the firm of Jackson and Moreland in Boston. Our sympathies are extended to his mother with whom he was living in Cambridge.

William A. Zisman is head of the lubrication branch of the Naval Research Laboratory in Washington, D.C. The Pittsburgh press recently recorded his talk before members of the Gulf Research and Development Company on "Boundary Lubrication from the Viewpoint of Surface Chemistry." – Royal M. Frye, who has served on the faculty of M.I.T., Lincoln Technical Institute, and Boston University, has been named professor of physics at Simmons College. He was scientific consultant to the Air Forces at Bikini in 1946, in charge of gathering spectrographic data on the atom bomb test.

In March, the North Adams *Independent* carried a headline: "Adams Native Makes Name in Investments." This was, of course, none other than James Adam Lyles, Vice-president of the First Boston Corporation. The article gives well deserved praise to Jim, "The Good Citizen." – Another classmate who is referred to often in the public press, Jack Herlihy, Vice-president of United Air Lines, has received the UAL emblem for 20 years of service with the airline. – JOSEPH S. HARRIS, *General Secretary*, Shell Oil Company, Inc., 50 West 50th Street, New York 20, N.Y.

• 1928 •

This year's freshman class – the Class of 1953, no less! – has three members whose fathers are members of 1928. They are: Burton A. Babb, son of Maynard Babb; Charles D. Buntschuh, son of Henry Buntschuh; and Henry S. Slayter, son of Rudy Slayter. That really should convince all of us that the years are creeping up. – Al Richmond is now public relations director of Massachusetts Memorial Hospital in Boston. He was formerly su-

perintendent of Harrington Memorial Hospital, Southbridge, Mass.

Since the announcement of Walter Wurdeman's untimely death last fall, we have received the following summary of his many important accomplishments in the architectural field: "Walter Wurdeman collaborated with his partner Welton Becket on some of the most famous buildings in the country. The Pan-Pacific Auditorium in Los Angeles, Bullock's Pasadena and Palm Springs stores, the Jai Alai stadium in Manila, the General Petroleum Building with its neighboring 'spiral garage' and the Prudential Building, which won the honor award of the American Institute of Architects, were only a few of the structures designed by Wurdeman and Becket. Recently the firm has been commissioned to design the new Lever Brothers processing plant, the medical center for the University of California at Los Angeles, and the Police Facilities building for Los Angeles' new civic center."

Sam Weibel, Public Health Engineer, United States Public Health Service, recently delivered a featured hour talk on "Septic Tank Research Findings" at a recent Indianapolis meeting of the Indiana Sewage Works Association. Roland F. Beers, Head of the Department of Fuels at Rensselaer Polytechnic Institute, conducted a question and answer period on United States fuels over the General Electric Science Forum Program, Radio Station WGY, Schenectady, N.Y. Allan T. Gwathmey, University of Virgina Associate Professor of Chemistry, has received one of three annual Science Research Awards from the Oak Ridge Institute of Nuclear Studies. The prize was given for his paper, "The Catalytic Reaction of Hydrogen and Oxygen on Plane Faces of a Single Crystal Copper." In 1941, Dr. Gwathmey received the Jefferson Award of the Virginia Academy of Science for a paper in economics. He is chairman of a university faculty committee to supervise the restoration of old walls and gardens according to Thomas Jefferson's first plan for the University of Virginia. — GEORGE I. CHATFIELD, *General Secretary*, 49 Eton Road, Larchmont, N.Y.

• 1931 •

Two brief but newsworthy items make up the column this month. Howard Richardson, who is director of industrial relations for Sylvania Electric Products, Inc., with headquarters in New York City, addressed the California Personnel Management Association in Berkeley, Calif., one night last winter. His subject was, "Gearing the Industrial Relations Program to the Worker Viewpoint." Howard has been with Sylvania since 1935 and has acquired a reputation for more than usual success in reconciling controversies between management and labor.

One of the most eligible of our dwindling supply of bachelors is about to forsake the ranks. The New York *Herald Tribune* of April 23 announced the engagement of Margaret Virginia Falson to Bernard T. Stott. Bernie is with the National City Bank in New York City. — JOHN N. HIGGINS, *General Secretary*, Apartment 4B, 181 East 161st Street, New York, N.Y.

• 1934 •

Norman B. Krim was recently promoted to vice-president in charge of the Receiving Tube Division of Raytheon Manufacturing Company in Waltham, Mass. — Henry N. Andrews has been elected a vice-president of Phi Beta Kappa at Washington University, St. Louis, Mo. Henry is dean of the School of Botany. — Warren Towle has been made director of research of the new research laboratory of the Franklin Process Company in Providence, R.I. His experience includes four years with the rayon division of Du Pont and a number of years with the Columbia Chemical Division of the Pittsburgh Plate Glass Company. He was on the M.I.T. Faculty when the Franklin Process Company hired him.

Mr. and Mrs. George C. Thomas, Jr., of Elizabeth, N.J., recently announced the engagement of their daughter, Alexandra Stamm Thomas, to Gordon Powers. Gordon is associated with William Lescaze of New York in architectural design. — JOHN G. CALLAN, JR., *General Secretary*, 184 Ames Street, Sharon, Mass. ROBERT C. BECKER, *Assistant Secretary*, Chile Exploration Company, Chuquicamata, Chile, S.A.

• 1939 •

Congratulations to Pierre Honnell whose promotion to the rank of professor at Washington University in St. Louis, Mo.. was announced recently by Chancellor Arthur H. Compton. The professorship is in Electrical Engineering and will become effective on July 1. — Other news being conspicuous by its absence, we close with the usual plea for information and suggest that you send vacation items to the Secretary. — STUART PAIGE, *General Secretary*, 701 Mill Plain Road, Fairfield, Conn. GEORGE BEESLEY, *Assistant Secretary*, Whittemore-Wright Company, Inc., 62 Alford Street, Charlestown 29, Mass.

• 1943 •

It is from afar off in sunny Italy that we hear of the wedding of one of our classmates. Robert A. Frey and the former Catherina deBruijn were married in Venice sometime in late March or early April. The groom is with the Shell Oil Company in The Hague, and his bride, whose home is in Rotterdam, has been working for the Allied High Commission for Germany, also at The Hague. Apparently, the Freys expect to be in Holland for another year.

It has been announced by her mother, who lives in Santa Barbara, Calif., that Gail How is engaged to Eugene William Place. The future bride has enjoyed as wide an education as I have ever had the pleasure to report. She studied at Les Tieulles School in Neuchatel, Switzerland, for a while, then graduated from The Principia in St. Louis. From here, she went to the University of Minnesota, thence to San Marcos in Lima, Peru, and finally to the University of California in Santa Barbara! Jim Hoey tells me that Gene is assistant plant manager in the Carter Carburetor Corporation's plant in St. Louis.

Two newspaper clippings bring the news that the engagement of Sarah Jane Wareham and William Banton Moore has been announced by her parents. Bill's future bride is a graduate of Sarah Lawrence College. Jean Helen Farr, whose home is in Stoneham, Mass., and Jean C. Hartshorne are also engaged. The bride to be is a graduate of the New England School of Art and at one time was also a voice student at the New England Conservatory of Music. The future bridegroom is with the Technological Laboratory of the United States Fish and Wildlife Service in Boston.

I regret immensely that I must announce to the Class that Philip L. Harris found it necessary to take his own life in Cambridge early in May.

Stewart Rowe spoke recently before the Women's City Club in Cincinnati about the much publicized and proposed national health program. His post is in the department of chemical research of Procter and Gamble. Betty Haas has written telling us, among other things, that Dick is leaving the Union Carbide and Carbon Corporation, and is to become the quality control man for the Krafco Container Company in Monroe, La. He, Betty, and their daughter Susan expect to leave New York this summer.

Dick Feingold and Jim Hoey rounded up news for us from the Boston area and have sent it along to me. Here it is! They ran into the Andersons, Bob and Pat, and the Rumseys, Bob and Sue, on Cape Cod last summer. Bob Anderson is a structural engineer with Gauteaume and McMullin with permanent post in Boston but temporarily assigned to a building project for American Stores in Philadelphia. Bob Rumsey, also stationed in Boston, is a sales engineer with the Owen Corning Fiberglass Company. Last fall the Rumseys were blessed with the arrival of Susan, their first offspring. Apparently, they expect to move to Wayland when their new home there is ready.

Gene and Shirley Eisenberg are the proud parents of two boys, Chuck and Andy. Gene is treasurer of the Eisenberg-Marden Corporation located in Boston, an outfit that is engaged in several building projects in the area. Another man associated with buildings is John Foley, now assistant superintendent of buildings and maintenance with the First National Bank of Boston. He and Jean have their time well spoken for by their young son Bobby! Jim Hoey himself is another man associated with the building trade, being a partner in the Empire State Equipment Company which he helped to organize last year. Prior to embarking on this venture, he was with the Sturtevant Division of Westinghouse.

Bill Verrochi is an engineer with Jackson and Moreland and assigned to a project at the Knolls Atomic Energy Plant at General Electric in Schenectady. He expects to be back in Boston sometime this summer. Art Vershbow and Herb Shivek are both with the Modern Die and Machine Company in Boston. The Ralph Leaders live in Needham, have two little girls, Christine and Beverly, and Ralph is a sales engineer with Raytheon. Kemp and Detta Maples and their three children, Cassie, Jimmie, and Tommy, live in Lexington, Mass. Apart from his duties as an instrumentation engineer with the

Doelcam Corporation in Newton, he is busily engaged in the triple hobby of "raising bees, fruit trees, and vegetables." And lastly, Dick Feingold, who is in his third year at the Boston University School of Law, says he is still single. He is also associated with the Gamewell Company in Newton where he is working with new police and fire communications systems.

So long until next fall! — CLINTON C. KEMP, *General Secretary,* 29 Verlynn Avenue, Hamilton, Ohio.

• 1947 •

It really is very gratifying to come into the office every morning and find a stack of letters on my desk containing your replies to the questionnaire we sent out some time ago. As we mentioned in the accompanying note, the Class is almost 1,700 strong, and the flow of letters will keep us busy tabulating for quite a while. Looks like I'm going to have to hire a secretary to help me organize the information. There's one advantage to this job! Some of the chaps took heed of the instructions and wrote "voluminously" in the space provided, and on the back, too. Sid Smith even went so far as to fill out his form with a ball point pen under water — as directed, we must admit. Sid by the way, has abandoned chemical engineering for group psychology in which he hopes to take a doctorate some day. He's working as a research assistant here at Technology.

Anyway, some of the notes make very interesting reading, indeed. Bob Baldwin writes: "Please urge the men of '47 to smoke more cigarettes because my job depends upon the sales of tobacco manufacturing machinery. During the past year, I have spent more than half my time in the south working on tobacco curers made by American Machine and Foundry. The remainder of the time was spent on another job which made me wish I'd worked harder at M.I.T." — Bill Bursnall says: "This letter finds me in the last few days of single life. Shortly, I'll be joining the ranks of the old married folks. You may remember Karen Walley — we were on our way to a blossoming friendship during that greatest of all Senior Weeks way back in '47. Life has been pretty good to me so far. Raises manage to come through to keep me in beer and pretzels, and my work here at the National Advisory Committee for Aeronautics keeps me busily delving into the mysteries of the boundary layer. The University of Virginia has a graduate extension school here at the NACA, so I'm back at more 'book larning' — night school during the winter, and eight weeks up in the beautiful mountains of Virginia for residence work — two years in all. The coming 5-year reunion sounds pretty good, I'll be on the lookout for more information."

Joe Deal very helpfully adds his bit: "Maybe some of this will be duplicated by others, but I might give you a little news of the activities in this area which may be interesting to some Course XIII boys, anyway. Aside from Sam Face, I don't know of any other '47 boys down here. There is a flock of boys from '48 and '49, however. Those at the shipyard (Newport News Shipbuilding and Drydock Company) that I have come in contact with are Bob Taylor'46, John Redpath'49, Mal Dick'49, and E. R. Williams '49. We have an alumni club down here — the M.I.T. Club of the Virginia Peninsula — and we have a pretty good outfit. There are about 90 Alumni in the area, and we usually get approximately 50 out for the meetings. Sam Face was recently elected president of said organization after serving as secretary last year. I might add, quite modestly of course, that I was vice-president last year."

Ed Kane enclosed a letter which he says, "I shall expect to find complete in the next Review." Well, here it is, Ed: "On July 10, 1949, I was married to Jackie Roth of West Hartford, Conn., Class of 1949, Simmons College. After our honeymoon to Cape Cod and Bermuda, we returned to Niagara Falls. In January, 1950, I changed jobs — left the Ontario Paper Company and went to Bell Aircraft Corporation as a rocket test engineer. Since then, I have started work in a very wonderful position at the Cuno Engineering Corporation, Meridan, Conn., as a research chemical engineer. I shall hope to see all the fellows from our Class at the reunion this June."

Of course, there were many others who added their comments to the questionnaires, but we will save those for the promised news letters which each and every one will receive. Our committee of Norm Holland, Jim Phillips, Walt Kisluk, and self has gained much helpful data on the 5-year reunion, and it will certainly aid us in making plans for that looked-forward-to event.

There are five engagements and three marriages to report via the press-clipping bureaus. Engaged are: Bill Adams to Doris Ellen Taylor of Bethlehem, Pa.; Bob Rediker to Jane Susan Friend of Forest Hills, N.Y.; Norm Boutilier to Jean Therese Murphy of Cambridge; Fred Bremmer to Nancy Doris Leinninger of Queens, N.Y.; and Courtney Reeves'44 to Sally Sargeant of Seymour, Ind. The papers also report the weddings of Dan Lord to Norma MacMullen of Yonkers, N.Y.; Mike Rosar to Virginia Wiley of Rye, N.Y.; and Walt Ericsson to Martha Ritzhaupt of Galion, Ohio. In addition, we have received the announcement of the engagement of Aaron Newman to Florence Levine, and an invitation to the wedding of Dick Scheuing to Doris Heginger of Lynbrook, N.Y. — CLAUDE W. BRENNER, *General Secretary,* Room 23-130, M.I.T., Cambridge 39, Mass.

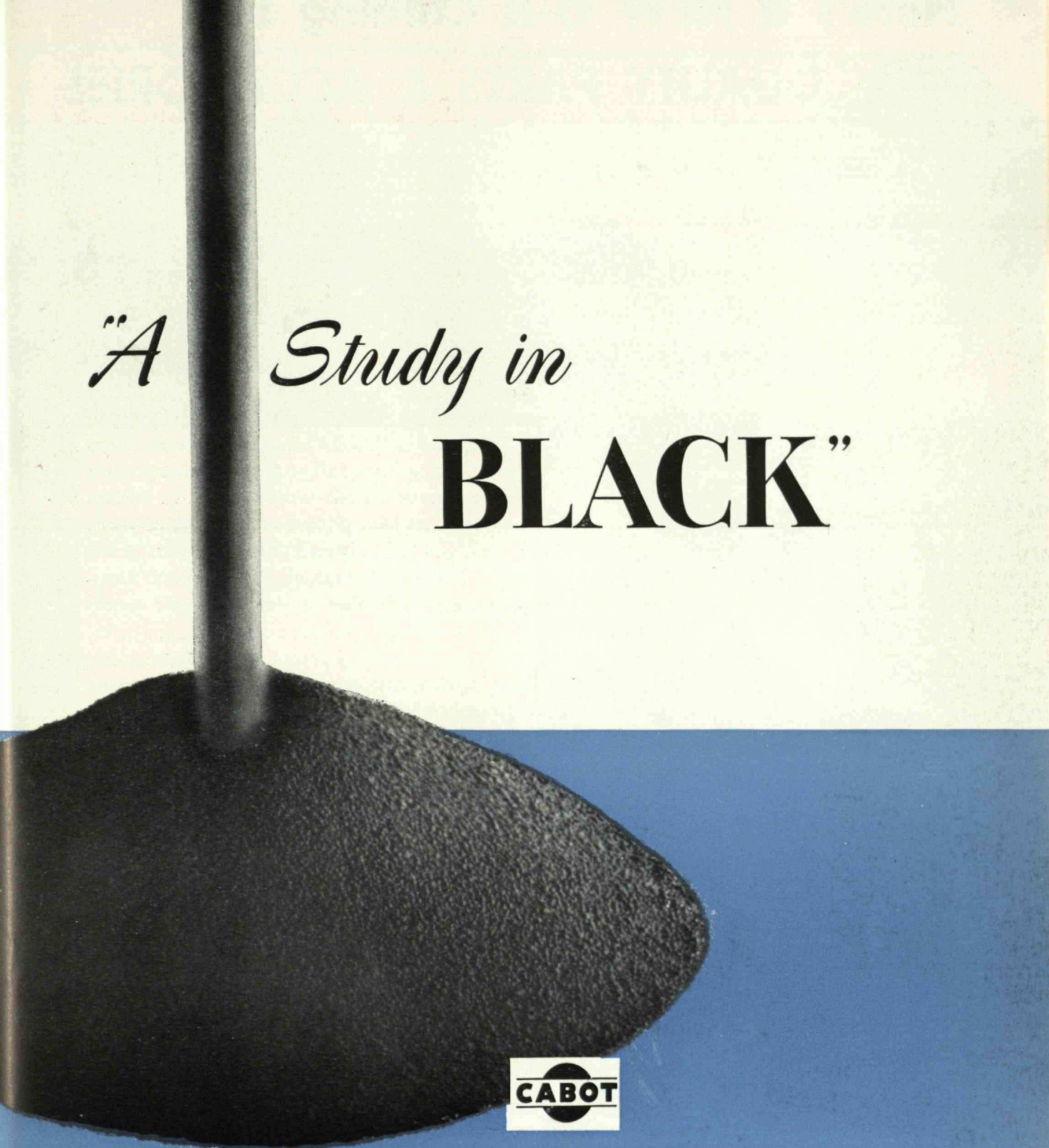
• 1949 •

The New York *Daily News* carried a feature article last month about a man who started and built up his own radio and television repair business. To supplement his practical approach, he hired Eric Howlett. The amazing part is that the man developed his business, which included installing aerials on roof tops, despite no formal education and being blind since the age of twelve. — Dropped into Jake Wirth's for the usual and ran into Charlie Sutherland and Jack Eddy. Charlie managed the Hope Theater in Providence for the summer and is now with Goodyear Tire and Rubber as "assistant runner-up" to the sales manager. Jack is a special student at Technology while working in the wind tunnel.

Open House attracted Tom Toohy, Russ Bracewell, and Bill Poynter. Tom is with Procter and Gamble in Cincinnati. Tom, blurry eyed from driving all night, wandered into my room to report the following. Both Russ and Bill are in Detroit. Bill, administrative assistant to car sales manager with Ford, is living with Howie Hendershott who is with Murray Corporation of America. Also reported in Detroit are Frank Mauck and Jack Sutherland who are with Fisher Body. — Kee Taschioglou just got off the crutches he picked up last winter skiing (a broken leg). — Ronnie Greene remained at Technology this past year (Course III). He has a position in Pittsburgh and plans to complete his master's at Pitt while working.

A visit to the Alumni Office revealed that the Class of '49 has 1,531 members. The following are the men who remained behind as candidates for master's (23) and additional bachelor's (9). Master's: Course II, Robert Barrows, Eugene Drucker, Gustav Loewen, Paul Osborn, Ned Rice, and Edward Somma; Course III, Wilfred McGrath; Course VIII, Hal Rorschach and Arthur Sakakura; Course X, Louis Basel, Joe Cobb, Dave Dudley, George Freund, Eugen Hirschland, Carl Lindstrom, Stan Margolin, and Burt Mendlin; Course XV, Austin Marx and Walter Wagner; Course XVI, Warren Joy; Course XVIII, John Carr and Alan Perlis; Course XIX, Robert White. Bachelor's: Course II, George Piness; Course XIV, William Lueckel; Course XV, Rodolfo Barrera, John Dalton, Edwin Dougherty, Isaac Foster, Peter Stein, and Daniel Tiffany.

WEDDINGS: William Beaton to Mary MacGilvra on April 8 in Wellesley Hills, Mass. Leonard Newton ushered. Lawrence Holt to Jane Knight on April 15 in Melrose Mass. J. Stoness Harford was best man and William B. Richards ushered. Donald Ridgley to Frances Mahoney on April 8 in Melrose, Mass. Don is with General Electric, Erie, Pa. — CHARLES WILLETT HOLZWARTH, *Secretary,* Morris C-36, Harvard Business School, Soldiers Field, Boston 63, Mass.



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